考试样卷

202212 版本

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考试说明

本试卷是 EXIN DevOps Foundation (DEVOPSF.CH)模拟考试。EXIN 考试准则适用于该考试。

本试卷由 40 道单项选择题组成。每道选择题有多个选项，但这些选项中只有一个是正确答案，除非题目中有额外说明。

本试卷的总分是 40 分。每道题的分数是 1 分。您需要获得 26 分或以上通过考试。

考试时间为 60 分钟。

祝您好运!

考试样卷

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关于敏捷的说法，哪一项**不正确**?

Which thought is **false** in Agile?

A) 在整个项目过程中，业务人员应与开发人员合作。
Business and development work together throughout the project.

B) 响应变化胜于遵循计划。
Responding to change is valued over following a plan.

C) 准确的实现客户的需求来满足客户是一个优先事项。
Satisfying the customer through exact fulfillment of their requirements is a priority.

D) 可用的软件是衡量进度的首要标准。
Working software is the primary measure of progress.

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根据美国国家标准与技术研究所（NIST），哪一项**不**属于云计算的本质特征?

According to the US National Institute of Standards and Technology (NIST), what is **not** an essential cloud computing characteristic?

A) 广泛的网络访问权限（broad network access）
Broad network access

B) 按使用次数计费系统（pay-per-use system）
Pay-per-use system

C) 快速弹性（rapid elasticity）
Rapid elasticity

D) 资源池（resource pooling）
Resource pooling

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从DevOps的诞生来看，参与软件开发的各方之间出现新的互动方式，触发对新的IT管理方式的需求，从而产生DevOps。

找到新的互动方式的各方具体是指哪些?

When looking at the emergence of DevOps, new ways of interacting between parties involved in software development triggered a need for new ways of IT management. This resulted in DevOps.

Which parties that found new ways to interact are meant?

A) 企业和客户
Business and customers

B) IT部门和客户
IT departments and customers

C) IT开发部和运维部
IT Development and Operations

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DevOps在很大程度上依赖于精益生产的原则和实践。IT中的一种浪费是"任务切换（task switching）"。

这种IT浪费是从哪类浪费转换而来?

DevOps relies heavily on the principles and practices of Lean Production. One of the types of waste in IT is 'task switching'.

From which original type of waste is this the translation for IT?

A) 动作（motion）
Motion

B) 过度生产（overproduction）
Overproduction

C) 运输（transportation）
Transportation

D) 等待（waiting）
Waiting

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价值流图的最有价值信息来自三个关键指标。

这三个关键指标之一是什么?

The most valuable information of a value stream map is taken from three key metrics.

What is one of these three key metrics?

A) 结合流的前置时间（lead time）
Lead time combined with flow

B) 完成度与准确度百分比
Percentage complete and accurate

C) 处理时间（process time）除以前置时间
Process time divided by lead time

D) 完成的价值减去浪费
Value completed minus waste

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当组织转换到DevOps实践时，对IT回报的期望值会增加。

DevOps在达到这一预期方面，与敏捷、Scrum和精益的不同之处是什么?

When switching to DevOps, a greater return on information technology is expected.

What differentiates DevOps from Agile, Scrum and Lean to meet this expectation?

A) DevOps加速了新产品和改良产品在开发部门和运维部门之间的交付。
DevOps accelerates the delivery of new and modified products between Dev and Ops.

B) DevOps加速了向市场和客户交付新产品和改良产品。
DevOps accelerates the delivery of new and modified products to the market and customers.

C) DevOps确保在预算范围内更快地响应基础架构的变化。
DevOps ensures a quicker response to changes in the infrastructure within budget.

D) DevOps确保更快地响应阻碍组织价值流的突发事件。
DevOps ensures a quicker response to incidents that hinder the organization's value stream.

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一家公司希望将产品上市时间从数年缩短至数月。一名员工说他们应该考虑在IT部门采用DevOps方法。

为什么改用DevOps有助于缩短产品上市时间?

A company wants to reduce their time-to-market from years to months. One of their coworkers says they should consider using DevOps methods in the IT department.

Why would changing to DevOps help reduce their time-to-market?

A) 因为DevOps将开发部和运维部集成到一个团队中，雇佣人员变少
Because DevOps integrates Development and Operations into a single team, there are fewer people employed

B) 因为DevOps团队的成本更高，他们加班更多，更快将产品上市
Because DevOps teams are more expensive, they work more overtime and get a product on the market quicker

C) 因为DevOps采用自给自足的专职团队，可以更灵活地应对不断变化的产品需求
Because DevOps uses self-sufficient dedicated teams, there is more agility to deal with changing product requirements

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降低技术债务的两种常用做法是什么?

What are two common practices for reducing technical debt?

A) 正式变更和发布管理实践
Formal change and release management practices

B) 事件管理和请求完成实践
Incident management and request fulfilment practices

C) 增加预算和资源
Increasing budget and resources

D) 重构并正视问题
Refactoring and facing the issue

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DevOps为组织带来了哪些重要优势?

Which significant advantage does DevOps bring to an organization?

A) 消除业务系统的脆弱性
Eliminate fragility of a business system

B) 降低客户的成本
Reduce cost for the customer

C) 减少文化挑战
Reduce cultural challenges

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DevOps有时被认为是敏捷的一部分。

DevOps回答了哪一个与敏捷无关的问题?

Sometimes, it is thought that DevOps is a part of Agile.

To which question, that has nothing to do with Agile, does DevOps give an answer?

A) 如何快速发布我们开发的软件以占据更大市场份额?
What can be done to release the software we develop quick enough to take a large market share?

B) 为了能更好的了解客户的需求，应与客户建立什么样的关系是必要的?
What relationship with our customers is necessary, so that we understand their requirements better?

C) 如何才能让产品的发布和运维变得既有意义又易于操作?
What should be done with a released product to make it useful and easy to operate?

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为什么"价值流"概念在DevOps中如此重要?

Why is the concept 'value stream' so important in DevOps?

A) 价值流有助于员工查看并清楚掌握他们的日常任务。
The value stream helps coworkers to see and understand their daily tasks.

B) 价值流有助于分析现状图(as-is map)并有助于改善指标的任何尝试。
The value stream helps to analyze the as-is map and any attempts to improve metrics.

C) 价值流有助于明确某人何时完成了自己的工作任务。
The value stream helps to identify when someone did their part of the work.

D) 价值流有助于流顺畅统一的经过所有流程和步骤。
The value stream helps to realize a smooth and uniform flow through all process steps.

E) 价值流有助于在当前的工作实践中实现局部优化。
The value stream helps to realize local optimization in the current work practice.

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价值流图的**第一步**是什么?

What is the **first** step in value stream mapping?

A) 创建需求规范
Create the requirements specification

B) 记录已完成的工作
Document the work done

C) 确定流程中的关键步骤
Identify the key steps in the process

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价值流图清楚地显示价值流中的低效环节。

为什么要制作价值流图?

A value stream map shows clearly where the inefficiencies in a value stream are.

Why should a value stream map be made?

A) 帮助优化业务流程
To help optimize business processes

B) 查看工作不够努力的人
To see which people are not working hard enough

C) 加快在制品（WIP）
To speed up the work in progress (WIP)

D) 将应该结束的产品线可视化
To visualize which product line should be ended

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任务需要按优先级排序。这种优先级排序通常出现在价值流入口的队列中。

为什么这种优先级排序通常会引发问题?

Tasks need to be prioritized. This prioritization takes place in the queue at the entry of the value stream.

Why does this prioritization often cause problems?

A) 因为到这个节点将决定如何为可自动执行的任务构建部署流水线。这需要时间，从而导致延期。
Because at this point, the decision is made how to build the deployment pipeline for the tasks that can be automated. This takes time, which causes delays.

B) 因为对价值流中关键指标度量的不正确或低效，从而引发问题。
Because enabling measurements of the key indicators in the value stream is done incorrectly or inefficiently, which leads to problems.

C) 因为可用于识别任务瓶颈的可视化工具以及在制品（WIP）限制的运用实施不恰当。
Because implementation of the use of visualization tools along with work-in-progress limits (WIP-limits), with which one can identify the bottlenecks of the tasks, is done incorrectly.

D) 因为必须创建价值流的原有版本和新版本，以及所需变更列表。这需要大量时间。
Because the development of the as-is version and the to-be version of the stream must be created, as well as a list of the changes required. This takes a lot of time.

E) 例如传统方法，在工作开展之前需要做出许多决策，这将导致大量的延期。
Because when many decisions are made before work even starts, like in the traditional approach, this causes massive delays.

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“部署流水线”这个概念的起源是什么?

Which idea is the origin of the concept 'deployment pipeline'?

A) 流水线承载液体形成流
A pipeline that carries a liquid creating flow

B) 汽车厂等装配线
An assembly line such as a car plant

C) 使用并行流水线的现代处理器
Modern processors that use parallel pipelining

D) 使用多个装配线的理念
The idea of using more than one assembly line

E) 部署人员负责不同工作的过程
The process of deploying people to do different jobs

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实施部署流水线时会遇到问题。起初，预先开发的测试不足以确保生产环境的稳定运维。

这个问题的**最优**解决方案是什么?

When implementing the deployment pipeline, problems are encountered. Initially, there are not enough pre-developed tests to ensure steady operation of the Production environment.

Which solution **best** addresses this problem?

A) 创建流水线和尽可能多的自动化，但在完成所有适当测试之前不要启用。
Create the pipeline and as many automations as possible, but do not use them until all the proper tests are in place.

B) 增加代码的覆盖率，测试作为技术债务必须尽快予以解决。
Increase the coverage of the code with tests as technical debt, which must be addressed as soon as possible.

C) 让流水线与开发的测试一起运行，并处理生产中出现的潜在问题。
Let the pipeline run with the developed tests and deal with the potential issues in Production when they arise.

D) 将流水线作为集成系统，仅将编写的代码交付至测试和质量保证（QA）。
Use the pipeline as an integration system to deliver the written code to test and quality assurance (QA) only.

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一个好的版本控制系统是DevOps中最佳的高绩效预测器之一。

哪一项是成功应用版本控制的必要条件?

A good version control system is one of the highest predictors of high performance in DevOps.

What is necessary to apply version control successfully?

A) 运用信息和配置的文化发生变化
A change in the culture of working with information and configuration

B) 显著提高变更实施的速度
A significant increase in the speed of change implementation

C) 刻意将混沌和不稳定引入生产
The deliberate introduction of chaos and instability in Production

D) 采用正式的自动化变更管理流程
The use of a formalized and automated change management process

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找到快速开发与维护应用可靠性之间的平衡，对于DevOps而言非常重要。

版本控制如何支持这一观点?

For DevOps, finding the balance between moving quickly and maintaining application reliability is important.

How does version control support this?

A) 通过让团队中的任何成员可以自由删除不必要的文件和文档
By allowing any member of the team to freely delete unnecessary files and documents

B) 通过允许组建小型独立和自给自足的开发团队
By allowing the formation of small independent and self-sufficient development teams

C) 通过应用专门的工具来消除或减少浪费并优化流程
By applying specialized tools to eliminate or reduce waste and optimize processes

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配置管理的益处是什么?

What benefit does configuration management have?

A) 允许任何团队成员无风险地删除不需要的文件。
It allows any team member to delete unwanted files without risk.

B) 允许主要团队成员缺席而不会出现问题。
It allows key team members to be absent without problems.

C) 允许团队成员查看谁在哪个日期更改哪些代码。
It allows team members to see who changed which code at what date.

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配置管理可以扩展IT基础架构和软件系统，且不需要更多人员。

在这样的扩展环境上，变更的理想完成方式是?

Configuration management makes it possible to scale IT infrastructure and software systems, without needing more people working on them.

How should changes to such a scaled environment ideally be done?

A) 通过持续集成
Through continuous integration

B) 通过完全控制的脚本
Through fully controlled scripts

C) 通过测试自动化
Through test automation

D) 通过部署流水线
Through the deployment pipeline

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从客户价值角度来讲，明确的“完成的定义”（DoD）在DevOps中至关重要。

哪项描述最符合DevOps中的“完成”?

A clear definition of done (DoD) is critical in DevOps and considers the value for the customer.

What is a good description of 'done' for DevOps?

A) 当创建完毕后即需求完成。
A requirement is done when it has been built.

B) 当测试完毕后即需求完成。
A requirement is done when it has been tested.

C) 当产品通过验收后即需求完成。
A requirement is done when the product is accepted.

D) 当产品发布到生产环境时即需求完成。
A requirement is done when the product is in Production.

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在传统实践中，发布可能会出现许多问题：某些变更未记录，系统未完全备份，或者系统以前的状态未保存。

DevOps如何确保频繁发布的同时不出现此类问题?

In traditional practices many things can go wrong with releases: some changes are not documented, the system has not been backed up fully, or there is no previous state of the system saved.

How does DevOps ensure frequent releases without these problems?

A) 通过自动化发布
By automating releases

B) 通过让运维来发布
By letting Operations release

C) 通过小规模发布
By making releases very small

D) 通过不记录所有变更
By not documenting all changes

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一个公司采用持续部署。

应该由谁决定何时发布新功能?

A company uses continuous deployment.

Whose decision should it be when to release new functionality?

A) 业务
The business

B) 客户
The customer

C) IT部门
The IT department

D) 用户
The user

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根据DevOps实践，什么是提高运维控制水平的**最佳**方法?

According to DevOps practices, what is the **best** way to increase the level of operational control?

A) 将人工操作全部自动化
Automating all manual operations

B) 定义适当的角色和职责
Defining appropriate roles and responsibilities

C) 设计控制流程和步骤
Designing control procedures

D) 改善运维治理
Improving operational governance

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DevOps解决突发事件的方式是什么?

What is the DevOps way of solving incidents?

A) 上报至问题管理团队并创建解决方案，直到他们解决事件。
Escalate to the problem management team and create a solution until they solve the incident

B) 调查突发事件，运行诊断程序，然后确定并实施变通方案。
Investigate the incident, run diagnostics, then identify and implement a workaround

C) 查看相关突发事件是否以前发生过并实施类似的问题解决方案。
See if a related incident occurred earlier and implement a similar solution to the problem

D) 将事件追溯到最近的部署，并将系统回滚到先前的稳定状态。
Trace the incident back to a recent deployment and roll the system back to a previous stable state

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在DevOps中，发现流程缺陷时应该怎么做?

In DevOps, what should be done when process deficiencies are found?

A) 所有变更都应提交到待办事项列表，这样可以在项目或改善（Kaizen）事件中发布。
All changes should be submitted to a backlog, so they can be released in a project or a Kaizen event.

B) 必须在发现缺陷后尽快找到并实施修复措施。
Fixes should be found and implemented as soon as possible after detection of the deficiency.

C) 必须找到修复措施，经变更经理批准，按优先级发布。
Fixes should be found, approved by the change manager, and released based on priority.

D) 必须找到修复措施，经持续改进经理批准，并立即发布。
Fixes should be found, approved by the continuous improvement manager, and released immediately.

E) 应该推迟修复，直到变更可以包含在适当的迭代中。
Fixes should be postponed until the change can be included in an appropriate iteration.

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哪一种做法**无法**帮助DevOps团队成功开发和交付工作软件?

What does **not** help a DevOps team to successfully develop and deliver working software?

A) 在项目期间组建一支短期的DevOps团队
Forming a DevOps team for a short period of time during a project

B) 识别、修复错误并立即吸取教训
Identifying, fixing and learning from errors as soon as they are found

C) 围绕组织使命组建DevOps团队
Organizing DevOps teams around an organizational mission

D) 编写代码，以软件具有内建品质作为主要目标
Writing code for software to have built-in quality as a main goal

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DevOps建议将实施的工作可视化。

可视化可以实现哪**两个**目标?

请记住选择2个备选答案。

DevOps recommends visualization of the work done.

Which **two** goals can be realized by visualization?

Please remember to choose 2 answers.

A) 构建拉式系统
Building a pull-system

B) 划分工作
Dividing the work

C) 激励承诺
Fostering commitment

D) 确定低效现象
Identifying inefficiencies

E) 通知客户
Informing the customer

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哪一项**不**是限制在制品（WIP）的原因?

What is **not** a reason to keep the work in progress (WIP) limited?

A) 减少生产力的损失
To decrease loss of productivity

B) 帮助消除约束
To help eliminate constraints

C) 有助于流的节奏
To help the rhythm of the flow

D) 提高资源利用率
To increase resource utilization

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在处理待办事项时，DevOps团队应该考虑哪些需求?

Which requirements should a DevOps team consider when working on a backlog item?

A) 非功能性需求和功能性需求
Both non-functional and functional requirements

B) 既不是非功能性需求也不是功能性需求
Neither non-functional nor functional requirements

C) 仅功能性需求
Only functional requirements

D) 仅非功能性需求
Only non-functional requirements

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哪一项属于让DevOps团队长期合作而带来的优势?

What is an advantage of having a DevOps team work together for a longer period?

A) 团队不再需要改进流程。
The team does not have to improve the process anymore.

B) 团队利用他们的经验来创新和改进流程。
The team uses their experience to innovate and improve the process.

C) 团队将开始更独立地工作。
The team will start working more independently.

D) 有时间更多地处理意外请求。
There is time left to process unexpected requests more often.

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团队以一周为一个迭代周期，频频遭遇瓶颈。

团队在识别瓶颈后，哪种应对方式**最恰当**?

The team works in one-week iterations and frequently encounters bottlenecks.

What is the **best** reaction of the team after they identify a bottleneck?

A) 识别瓶颈后尽快消除瓶颈
Eliminate the bottleneck as soon as possible after it is identified

B) 只延长发现瓶颈的迭代周期
Lengthen only the iteration in which a bottleneck is found

C) 限制一个批次中的常规任务数量来减小批次大小
Limit the regular number of tasks in a batch to reduce batch size

D) 运用可视化工具以及在制品（WIP）限制
Use visualization tools along with work-in-progress limits (WIP-limits)

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何时运用DevOps进行组织和技术变革会导致混沌和失控?

When can the use of DevOps for organizational and technological changes lead to chaos and loss of control?

A) 当组织的核心业务高度依赖于信息技术时
When the core business of the organization highly depends on information technology

B) 当组织变得复杂并想要解决长期累积形成的问题时
When the organization is complex and wants to solve chronic problems

C) 当组织需要快速变更以测试新的商业构思或假设时
When the organization requires rapid changes to test new business ideas or hypotheses

D) 当组织使用的信息技术变化率较高时
When the rate of change in the information technology used by the organization is high

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公司关注DevOps的原因有很多。

公司应该在什么情况下开始关注DevOps?

There are many reasons for a company to become interested in DevOps.

When should companies become interested in DevOps?

A) 当敏捷实践不适合组织时
When Agile practices do not seem to fit the company

B) 当其他实践方法不能帮助组织实现预期结果时
When no other method gives the necessary results

C) 当组织在实施Scrum和精益实践之后
When Scrum and Lean practices have been implemented

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组织采用DevOps时，什么可能会使之遇到困难?

What can cause difficulties when DevOps is adopted?

A) 跨职能团队
Cross-functional teams

B) 虚拟化技术的使用受限
Limited use of virtualization

C) 微服务架构
Microservice architecture

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组织中的许多员工仍以单一实体的形式来开发和维护IT系统。

在这种情况下，可以预知采纳DevOps实践会遇到什么困难?

An IT system is still being developed and maintained by many employees as a single entity.

What difficulty with adopting DevOps practices can be expected?

A) 分配DevOps团队不同责任范围
Assigning DevOps teams to separate areas of responsibility

B) 创建跨职能团队以处理组织结构
Creating cross-functional teams to work on the organizational structure

C) 维护和版本控制多个API以实现向后兼容
Maintaining and versioning multiple APIs for backward compatibility

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商业现成软件（COTS）用于快速获取所需的结果，因为开发定制软件需要耗费大量时间。

关于COTS的说法哪一项是**正确**的?

Commercial off-the-shelf software (COTS) is used to quickly get the results needed, because it takes time to develop custom software.

What is **true** about COTS?

A) COTS需要定制，并使用脚本来配置系统。
COTS requires customization and scripting to configure the system.

B) COTS应该用于支持战略业务线。
COTS should be used to support strategic business lines.

C) 使用现成软件一般更加灵活。
Using ready to use software is generally more flexible.

D) 使用现成软件通常要便宜得多。
Using ready to use software is usually much cheaper.

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刚性或单体IT架构有什么困难?

What is a difficulty of a rigid or monolithic IT architecture?

A) 改变和开发IT架构本身很难做到
Changing and developing the IT architecture itself is difficult to do

B) 修改架构内的服务需要独立完成
Modifying services within the architecture is done independently

C) 在不禁用当前版本的情况下更新到新版本
Updating to a new version without disabling the current version

D) 等待所有组件准备就绪进行大规模迁移
Waiting for all components to be ready for a large-scale migration

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建议组织自定义并选择适用于该组织的DevOps实践。必须提出关于该组织的针对性问题，而且必须找到关于该组织的针对性答案。

为什么说这是一个好主意?

It is recommended that organizations customize and select DevOps practices that work in that organization. Organization-specific questions must be raised and organization-specific answers must be found.

Why is this a good idea?

A) 因为有关DevOps的出版物并不能总是反映组织的实际情况，还会少报困难和失败
Because DevOps publications do not always reflect reality and underreport difficulties and failures

B) 因为这是成为一个可受雇来实施DevOps的DevOps工程师的途径
Because that is the way to become a DevOps engineer that can be hired for implementing DevOps

C) 因为管理团队最了解如何在其组织中实施DevOps
Because the management teams know best how to implement DevOps in their own organization

D) 因为关于DevOps的出版物和活动过少而无法形成独立的意见
Because there are too few publications and events about DevOps to form independent opinions

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一个组织拥有遗留IT基础架构，他们希望开始采用DevOps。

在该类组织中，常见的做法是什么?

An organization has a legacy IT infrastructure. They want to start with DevOps.

What is a common approach in such an organization?

A) 开始将DevOps作为软件产品实施，安装并启动
To start implementing DevOps as a software product, install it and start it

B) 开始采用至少执行装配和初始测试的基本流水线
To start with a basic pipeline that performs at least assembly and initial testing

C) 首先选择优化机会最大的产品
To start with a selection of the product with the greatest opportunities for optimization

D) 首先识别那些与其他系统松耦合的系统
To start with identifying those systems that are loosely connected with others

E) 首先分配一定比例的工作时间进行改进
To start with the allocation of a certain proportion of working time for the improvement

答案解析

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关于敏捷的说法，哪一项**不正确**?

Which thought is **false** in Agile?

A) 在整个项目过程中，业务人员应与开发人员合作。
Business and development work together throughout the project.

B) 响应变化胜于遵循计划。
Responding to change is valued over following a plan.

C) 准确的实现客户的需求来满足客户是一个优先事项。
Satisfying the customer through exact fulfillment of their requirements is a priority.

D) 可用的软件是衡量进度的首要标准。
Working software is the primary measure of progress.

A) 错误。“项目实施过程中，业务人员与开发人员必须始终通力协作”是敏捷宣言的一部分。
Incorrect. "Business people and developers must work together daily on the project" is part of the Agile Manifesto.

B) 错误。响应变化胜于遵循计划是敏捷宣言的一部分。
Incorrect. Responding to change over following a plan is part of the Agile Manifesto.

C) 正确。准确的实现客户的需求来满足客户并不是敏捷宣言的一部分，也不是敏捷的目标。（文献：A，第1.1.1章）
Correct. Satisfying customers through exact fulfillment of their requirements is not part of the Agile Manifesto, and it is not an aim of Agile. (Literature: A, Chapter 1.1.1)

D) 错误。可用的软件是衡量进度的首要标准是敏捷宣言的一部分。
Incorrect. Working software as the primary measure of progress is part of the Agile Manifesto.

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根据美国国家标准与技术研究所（NIST），哪一项**不**属于云计算的本质特征?

According to the US National Institute of Standards and Technology (NIST), what is **not** an essential cloud computing characteristic?

A) 广泛的网络访问权限（broad network access）
Broad network access

B) 按使用次数计费系统（pay-per-use system）
Pay-per-use system

C) 快速弹性（rapid elasticity）
Rapid elasticity

D) 资源池（resource pooling）
Resource pooling

A) 错误。广泛的网络访问权限是美国国家标准与技术研究所提到的云计算本质特征之一。
Incorrect. Broad network access is one of the essential cloud computing characteristics mentioned by the US NIST.

B) 正确。按次计费系统被经常使用，但不是美国国家标准与技术研究所提到的云计算本质特征之一。其他类型的合同也是可能的。（文献：A，第1.1.2章）
Correct. The pay-per-use system is often used but is not one of the essential cloud computing characteristics mentioned by the US NIST. Other types of contracts are possible. (Literature: A, Chapter 1.1.2)

C) 错误。快速弹性是美国国家标准与技术研究所提到的云计算本质特征之一。
Incorrect. Rapid elasticity is one of the essential cloud computing characteristics mentioned by the US NIST.

D) 错误。资源池是美国国家标准与技术研究所提到的云计算本质特征之一。
Incorrect. Resource pooling is one of the essential cloud computing characteristic mentioned by the US NIST.

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从DevOps的诞生来看，参与软件开发的各方之间出现新的互动方式，触发对新的IT管理方式的需求，从而产生DevOps。

找到新的互动方式的各方具体是指哪些?

When looking at the emergence of DevOps, new ways of interacting between parties involved in software development triggered a need for new ways of IT management. This resulted in DevOps.

Which parties that found new ways to interact are meant?

A) 企业和客户
Business and customers

B) IT部门和客户
IT departments and customers

C) IT开发部和运维部
IT Development and Operations

A) 错误。企业本身可能已经改变了与客户互动的方式，但这本身并没有触发DevOps。DevOps由IT部门与企业（客户）之间的互动所触发。
Incorrect. The business itself may have changed ways of interacting with their customers, but this did not trigger DevOps per se. DevOps was triggered by the interaction between the IT department and the business (customer).

B) 正确。“首先，由于出现了与业务客户互动的新方式，以及敏捷开发技术得到充分应用，形成了对新的IT管理方式的需求。“根据市场的变化以及人们与钟爱品牌的关系，需要采用新的方式与客户互动，另外，敏捷技术的充分应用意味着企业的敏捷（而不仅仅是IT）将得到更高的认知收益。（文献：A，第1.1.3章）
Correct. "First, due to the emergence of new ways of interacting with the business customers, and to the adequate application of Agile development techniques, a need for new ways of IT management has developed." New ways are required to interact with customers as per the changes in the market and in the way people relate with their preferred brands, also adequate application of Agile techniques implies a better perceived return on Agile by the business (not just IT). (Literature: A, Chapter 1.1.3)

C) 错误。内部IT部门之间的互动并不是触发DevOps发展的原因。
Incorrect. The interaction between internal IT areas is not what triggered the development of DevOps.

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DevOps在很大程度上依赖于精益生产的原则和实践。IT中的一种浪费是"任务切换（task switching）"。

这种IT浪费是从哪类浪费转换而来?

DevOps relies heavily on the principles and practices of Lean Production. One of the types of waste in IT is 'task switching'.

From which original type of waste is this the translation for IT?

A) 动作（motion）
Motion

B) 过度生产（overproduction）
Overproduction

C) 运输（transportation）
Transportation

D) 等待（waiting）
Waiting

A) 错误。IT中的交接（handoff）对应于精益中的动作。
Incorrect. Handoff in IT corresponds to motion in Lean.

B) 错误。IT中的额外功能对应于精益中的过度生产。
Incorrect. Extra feature in IT corresponds to overproduction in Lean.

C) 正确。IT中的任务切换对应于精益中的运输。（文献：A，第2.1.1章）
Correct. Task switching in IT corresponds to transportation in Lean. (Literature: A, Chapter 2.1.1)

D) 错误。IT中的等待对应于精益中的等待。
Incorrect. Waiting in IT corresponds to waiting in Lean.

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价值流图的最有价值信息来自三个关键指标。

这三个关键指标之一是什么?

The most valuable information of a value stream map is taken from three key metrics.

What is one of these three key metrics?

A) 结合流的前置时间（lead time）
Lead time combined with flow

B) 完成度与准确度百分比
Percentage complete and accurate

C) 处理时间（process time）除以前置时间
Process time divided by lead time

D) 完成的价值减去浪费
Value completed minus waste

A) 错误。前置时间是一个关键指标，但流并不是指标。它是速度的概念，可以通过前置时间和处理时间来衡量。
Incorrect. Lead time is a key metric, but flow is not a metric. It is a concept of velocity that can be measured by lead time and process time.

B) 正确。完成度与准确度百分比是价值流图的关键指标，有助于收集最有价值的信息。（文献：A，第3.1章）
Correct. Percent complete and accurate is a key metric of the value stream map that helps to gather the most valuable information. (Literature: A, Chapter 3.1)

C) 错误。处理时间和前置时间都是关键指标，但二者的比率并不是一个有用的指标。
Incorrect. Process time and lead time are both key metrics, but the ratio between them is not a useful measure.

D) 错误。完成的价值减去浪费并非指标。但二者都是DevOps概念。
Incorrect. Value completed minus waste is not a metric. Both are DevOps concepts, though.

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当组织转换到DevOps实践时，对IT回报的期望值会增加。

DevOps在达到这一预期方面，与敏捷、Scrum和精益的不同之处是什么?

When switching to DevOps, a greater return on information technology is expected.

What differentiates DevOps from Agile, Scrum and Lean to meet this expectation?

A) DevOps加速了新产品和改良产品在开发部门和运维部门之间的交付。
DevOps accelerates the delivery of new and modified products between Dev and Ops.

B) DevOps加速了向市场和客户交付新产品和改良产品。
DevOps accelerates the delivery of new and modified products to the market and customers.

C) DevOps确保在预算范围内更快地响应基础架构的变化。
DevOps ensures a quicker response to changes in the infrastructure within budget.

D) DevOps确保更快地响应阻碍组织价值流的突发事件。
DevOps ensures a quicker response to incidents that hinder the organization's value stream.

A) 错误。加速部门之间产品交付是DevOps的结果。但是，由于这不能为客户创造价值，因此实现IT更高收益并非DevOps的预期价值。
Incorrect. Accelerating the delivery of products between departments is a consequence of DevOps. However, since it does not deliver value to the customer, it is not an expected value from DevOps to achieve greater return on IT.

B) 正确。这就是DevOps增加IT收益的方式：加速在生产中向客户交付产品，帮助企业更快更好地实现价值。（文献：A，第1.2章）
Correct. This is how DevOps will produce greater return on IT; by accelerating the delivery of products to customers in production, helping the business realize value faster and better. (Literature: A, Chapter 1.2)

C) 错误。在预算范围内基础架构的变化是IT的内部需求。仅仅改变基础架构，企业无法获得更高的IT收益。
Incorrect. Changes to the infrastructure are an internal need from IT, also adherence to budget. The business will not get greater returns on IT just from changing the infrastructure.

D) 错误。这不是实现更高IT收益的方式。即使响应更快会带来更好的用户体验，但这本身无法产生更大的收益。
Incorrect. This is not a way to achieve greater return on IT. Even though quicker responses will produce a better user experience, it does not help to produce greater returns on its own.

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一家公司希望将产品上市时间从数年缩短至数月。一名员工说他们应该考虑在IT部门采用DevOps方法。

为什么改用DevOps有助于缩短产品上市时间?

A company wants to reduce their time-to-market from years to months. One of their coworkers says they should consider using DevOps methods in the IT department.

Why would changing to DevOps help reduce their time-to-market?

A) 因为DevOps将开发部和运维部集成到一个团队中，雇佣人员变少
Because DevOps integrates Development and Operations into a single team, there are fewer people employed

B) 因为DevOps团队的成本更高，他们加班更多，更快将产品上市
Because DevOps teams are more expensive, they work more overtime and get a product on the market quicker

C) 因为DevOps采用自给自足的专职团队，可以更灵活地应对不断变化的产品需求
Because DevOps uses self-sufficient dedicated teams, there is more agility to deal with changing product requirements

题目未完，接下一页

A) 错误。雇佣人员通常不会变少，反倒有可能会变多，因为每个产品或产品线都有由开发人员、运维人员和其他专家组成的自给自足的专职团队。此外，集成本身并不一定能使DevOps成为更快的开发，却会在部署后使软件更具鲁棒性，因为开发可以更好地了解运维的需求。
Incorrect. There are usually not fewer, but more people employed, because each product or product line has their own dedicated self-sufficient team of developers, operators and other specialists. In addition, the integration itself does not make DevOps a faster way of developing necessarily, but makes software more robust when deployed, because Dev understands the needs of Ops better.

B) 错误。虽然自给自足的专职团队可能成本更高，但DevOps实践从不依赖于结构性加班来更快地完成工作。恰恰相反：DevOps喜欢尝试找到可持续的速度和节奏。
Incorrect. Although the self-sufficient dedicated teams can be more expensive, DevOps practices never rely on structurally working overtime to get things done faster. Quite the opposite is true: DevOps likes to try to find a sustainable pace and rhythm.

C) 正确。因为由一个自给自足的专职团队负责单一产品时，将减少对该产品工作的干扰和中断。此外，团队无须等待专家。这样可以减少等待时间形式的大量浪费，并帮助团队缩短产品上市时间。（文献：A，第1.3.1章）
Correct. Because there is a single dedicated and self-sufficient team working on a single product, there are less distractions and interruptions to the work on that product. In addition, the team does not need to wait for a specialist. This reduces great amounts of waste in the form of waiting time and helps the team reduce their time-to-market. (Literature: A, Chapter 1.3.1)

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降低技术债务的两种常用做法是什么?

What are two common practices for reducing technical debt?

A) 正式变更和发布管理实践
Formal change and release management practices

B) 事件管理和请求完成实践
Incident management and request fulfilment practices

C) 增加预算和资源
Increasing budget and resources

D) 重构并正视问题
Refactoring and facing the issue

A) 错误。这两个程序可能增加技术债务。
Incorrect. These are two processes that could increase technical debt.

B) 错误。这两个流程可能导致而非减少技术债务。
Incorrect. These two processes could cause technical debt instead of reducing it.

C) 错误。这不会直接帮助降低技术债务，尽管开发人员增多时，可能会加快降低技术债务。
Incorrect. This will not directly help reduce technical debt, although when there are more developers, technical debt may be reduced faster.

D) 正确。根据文献，两种常用做法是重构并直面问题。（文献：A，第1.3章）
Correct. According to the literature, two of the commonly used practices are Refactoring and facing the issue. (Literature: A, Chapter 1.3)

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DevOps为组织带来了哪些重要优势?

Which significant advantage does DevOps bring to an organization?

A) 消除业务系统的脆弱性
Eliminate fragility of a business system

B) 降低客户的成本
Reduce cost for the customer

C) 减少文化挑战
Reduce cultural challenges

A) 正确。“DevOps预期将解决：缩短产品上市时间，降低技术债务并消除脆弱性。”（文献：A，第1.3.3章）
Correct. "DevOps is expected to address: reducing time to market, reducing technical debt and eliminating fragility." (Literature: A, Chapter 1.3.3)

B) 错误。DevOps实践可能成本更高，不专注于降低客户的成本。
Incorrect. DevOps practices can be more expensive and there is no focus on reducing the costs for the customer.

C) 错误。虽然DevOps鼓励多元化的团队，但这并不能保证减少文化挑战。
Incorrect. Although DevOps encourages a diverse team, this does not guarantee a reduction of cultural challenges.

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DevOps有时被认为是敏捷的一部分。

DevOps回答了哪一个与敏捷无关的问题?

Sometimes, it is thought that DevOps is a part of Agile.

To which question, that has nothing to do with Agile, does DevOps give an answer?

A) 如何快速发布我们开发的软件以占据更大市场份额?
What can be done to release the software we develop quick enough to take a large market share?

B) 为了能更好的了解客户的需求，应与客户建立什么样的关系是必要的?
What relationship with our customers is necessary, so that we understand their requirements better?

C) 如何才能让产品的发布和运维变得既有意义又易于操作?
What should be done with a released product to make it useful and easy to operate?

A) 错误。产品的发布既是敏捷又是DevOps的一部分。敏捷有助于快速发布最终产品的功能性部分。DevOps进一步探索了更好地为实际客户创造真正价值的方法。
Incorrect. The release of a product is both part of Agile and DevOps. Agile helps to quickly release functioning parts of the final product. DevOps further explores ways of delivering real value to actual customers better.

B) 错误。与客户的关系和需求收集都是敏捷和DevOps的一部分。产品负责人将与客户保持密切联系，以确保产品增加价值。
Incorrect. The relationship with the customer and the requirement gathering are both part of Agile and DevOps. Product Owners will maintain close contact with the customer to ensure value is being added to the product.

C) 正确。在开发过程中考虑发布和运维阶段不一定是敏捷的一部分，但却是DevOps的重要部分。（文献：A，第1.5.1章）
Correct. Thinking about the release and operate phases during development are not necessarily part of Agile, but they are an essential part of DevOps. (Literature: A, Chapter 1.5.1)

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为什么“价值流”概念在DevOps中如此重要?

Why is the concept 'value stream' so important in DevOps?

A) 价值流有助于员工查看并清楚掌握他们的日常任务。
The value stream helps coworkers to see and understand their daily tasks.

B) 价值流有助于分析现状图(as-is map)并有助于改善指标的任何尝试。
The value stream helps to analyze the as-is map and any attempts to improve metrics.

C) 价值流有助于明确某人何时完成了自己的工作任务。
The value stream helps to identify when someone did their part of the work.

D) 价值流有助于流顺畅统一的经过所有流程和步骤。
The value stream helps to realize a smooth and uniform flow through all process steps.

E) 价值流有助于在当前的工作实践中实现局部优化。
The value stream helps to realize local optimization in the current work practice.

A) 错误。这是关于“他们的工作内容”，却错过了预期的结果“为什么”。
Incorrect. This is "The what of their work", while missing the expected outcome "The why".

B) 错误。优化工作不应限于分析现状图。有必要绘制与当前工作实践大有不同的前景图（to-be map）。
Incorrect. The optimization work should not be limited to analyzing the as-is map. It is necessary to develop a to-be map, which may be quite different from the current work practice.

C) 错误。重要的是要知道客户何时获得或开始获得他们期望的价值。
Incorrect. It is important to know when the customer received or started to receive the value they expected.

D) 正确。价值流的概念确保流程中各个步骤之间流畅且一致的流动。（文献：A，第3.1章）
Correct. The concept of the value stream ensures that a smooth and uniform flow from one step to the next in the process can be created. (Literature: A, Chapter 3.1)

E) 错误。这有助于识别和消除瓶颈，同时避免局部优化陷阱。
Incorrect. It helps to identify and eliminate bottlenecks, while avoiding the local optimization trap.

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价值流图的**第一步**是什么?

What is the **first** step in value stream mapping?

A) 创建需求规范
Create the requirements specification

B) 记录已完成的工作
Document the work done

C) 确定流程中的关键步骤
Identify the key steps in the process

A) 错误。第一步应该是确定特定流程和组织的关键步骤。
Incorrect. The first step should be to identify key steps for the team's particular process and organization.

B) 错误。应该先确定关键步骤，再记录已完成的工作。在非必要步骤上完成的工作不是价值流图的一部分。
Incorrect. Documentation of the work done should be done only after identifying the key steps. Work done on non-essential steps is not part of the value stream map.

C) 正确。这应该是价值流图的第一步。组织应关注自己创建价值流图所针对的流程，并识别完成工作和增加价值的关键步骤。（文献：A，第3.1章）
Correct. This should be the first step when value stream mapping. The organization should look at the process for which they want to create a value stream map and identify the key steps where work is done and value is added. (Literature: A, Chapter 3.1)

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价值流图清楚地显示价值流中的低效环节。

为什么要制作价值流图?

A value stream map shows clearly where the inefficiencies in a value stream are.

Why should a value stream map be made?

A) 帮助优化业务流程
To help optimize business processes

B) 查看工作不够努力的人
To see which people are not working hard enough

C) 加快在制品（WIP）
To speed up the work in progress (WIP)

D) 将应该结束的产品线可视化
To visualize which product line should be ended

题目未完，接下一页

A) 正确。这是制作价值流图时应该考虑的原因，也是这个做法最有价值之处。（文献：A，第3.1章）
Correct. This is the reason one should have in mind when creating the value stream map and this is where the exercise has the most value. (Literature: A, Chapter 3.1)

B) 错误。绘制价值流图的原因并非为了查看谁是多余的，谁应该先被解雇或者谁没有努力工作。相反，应该优化流程，这样公司员工可以开始增加产量，提高质量。
Incorrect. The reason to do a value stream mapping is not to see who is redundant, who should get fired first or who is not pulling their weight. Instead, the processes should be optimized, so that the people in the company can start producing higher quantities with higher quality.

C) 错误。虽然流程可能会加快，但工作本身并不一定需要加快。相反，工作本身可能会减慢以避免错误并提高一次成功率，从而省去质量控制环节。加快工作速度不是目标，消除浪费并为企业增加更多价值才是目标。
Incorrect. Although the process may speed up, the work itself does not necessarily need to speed up. Rather, the work itself may slow down to avoid errors and increase first-time-right, which can save a step of quality control. Speeding up the work is not the goal, eliminating waste and adding more value to the business is.

D) 错误。虽然企业可能根据价值流图决定结束业务线或产品线，但这绝不是价值流图的目标。相反，应仅针对可行产品绘制价值流图。
Incorrect. Although the business may decide to end a business line or a product line based on the value stream map, this is never the goal of value stream mapping. Instead, value stream mapping should only be done for viable products.

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任务需要按优先级排序。这种优先级排序通常出现在价值流入口的队列中。

为什么这种优先级排序通常会引发问题?

Tasks need to be prioritized. This prioritization takes place in the queue at the entry of the value stream.

Why does this prioritization often cause problems?

A) 因为到这个节点将决定如何为可自动执行的任务构建部署流水线。这需要时间，从而导致延期。
Because at this point, the decision is made how to build the deployment pipeline for the tasks that can be automated. This takes time, which causes delays.

B) 因为对价值流中关键指标度量的不正确或低效，从而引发问题。
Because enabling measurements of the key indicators in the value stream is done incorrectly or inefficiently, which leads to problems.

C) 因为可用于识别任务瓶颈的可视化工具以及在制品（WIP）限制的运用实施不恰当。
Because implementation of the use of visualization tools along with work-in-progress limits (WIP-limits), with which one can identify the bottlenecks of the tasks, is done incorrectly.

D) 因为必须创建价值流的原有版本和新版本，以及所需变更列表。这需要大量时间。
Because the development of the as-is version and the to-be version of the stream must be created, as well as a list of the changes required. This takes a lot of time.

E) 例如传统方法，在工作开展之前需要做出许多决策，这将导致大量的延期。
Because when many decisions are made before work even starts, like in the traditional approach, this causes massive delays.

题目未完，接下一页

A) 错误。此步骤出现在流程的稍后阶段，并且不会在价值流入口的队列中引发问题。
Incorrect. This step is taken later in the process and does not cause problems at the queue at the entry of the value stream.

B) 错误。这不是价值流第一步的目标（指标数量的最大化），不应该在这个节点进行，因此不该引发所提到的问题。
Incorrect. This is not an objective of the first step of the value stream (maximization of the number of metrics) and should not be done at this point, so this should not cause the problems mentioned.

C) 错误。通过这种方式，实现无延期均匀流的状态并显现出瓶颈，但是这不是在所述节点发生的问题。
Incorrect. In this way a state of an even flow without delays is achieved and bottlenecks are shown, but this is not the problem that occurs at the point mentioned.

D) 错误。这个是在价值流的稍后流程中实现，因此不会在所述的节点引发问题。
Incorrect. This is achieved later in the process of the value stream, so this should not cause problems at the point mentioned.

E) 正确。当一个组织继续采用许多传统实践，所有工作相关决策都是在开始工作之前做出的，这会引发上述问题。（文献：A，第4.10章）
Correct. When an organization keeps using many traditional practices, where all decisions regarding the work are made before starting the work, this causes the problems mentioned. (Literature: A, Chapter 4.10)

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"部署流水线"这个概念的起源是什么?

Which idea is the origin of the concept 'deployment pipeline'?

A) 流水线承载液体形成流
A pipeline that carries a liquid creating flow

B) 汽车厂等装配线
An assembly line such as a car plant

C) 使用并行流水线的现代处理器
Modern processors that use parallel pipelining

D) 使用多个装配线的理念
The idea of using more than one assembly line

E) 部署人员负责不同工作的过程
The process of deploying people to do different jobs

A) 错误。这是一个常见的错误观点，不是概念的正确含义。
Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.

B) 错误。这是一个常见的错误观点，不是概念的正确含义。
Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.

C) 正确。Jez Humble 和 David Farley明确表示，当他们创造这个术语时，灵感来源于现代处理器架构的管道传送，这种管道大幅加快了结果的产生。（文献：A，第3.2章）
Correct. Humble and Farley clarified that when they coined the term they used the idea of pipelining from modern processors architecture that allows it to produce far faster results. (Literature: A, Chapter 3.2)

D) 错误。这是一个常见的错误观点，不是概念的正确含义。
Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.

E) 错误。这是一个常见的错误观点，不是概念的正确含义。
Incorrect. This is a common inaccurate opinion and not the proper meaning of the concept.

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实施部署流水线时会遇到问题。起初，预先开发的测试不足以确保生产环境的稳定运维。

这个问题的**最优**解决方案是什么?

When implementing the deployment pipeline, problems are encountered. Initially, there are not enough pre-developed tests to ensure steady operation of the Production environment.

Which solution **best** addresses this problem?

A) 创建流水线和尽可能多的自动化，但在完成所有适当测试之前不要启用。
Create the pipeline and as many automations as possible, but do not use them until all the proper tests are in place.

B) 增加代码的覆盖率，测试作为技术债务必须尽快予以解决。
Increase the coverage of the code with tests as technical debt, which must be addressed as soon as possible.

C) 让流水线与开发的测试一起运行，并处理生产中出现的潜在问题。
Let the pipeline run with the developed tests and deal with the potential issues in Production when they arise.

D) 将流水线作为集成系统，仅将编写的代码交付至测试和质量保证（QA）。
Use the pipeline as an integration system to deliver the written code to test and quality assurance (QA) only.

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A) 错误。创建流水线但在完成所有测试之前不要动用将花费大量时间，从而损失业务资金。应该尝试迭代方法，先完成最重要的测试，再持续产生新的测试以增加覆盖率。
Incorrect. Creating the pipeline and not using it until all the tests are in place will take too much time, which loses the business money. An iterative approach should be attempted, with the most important tests first and continuously generating new tests to increase coverage.

B) 正确。通过测试增加代码的覆盖率是解决此问题的唯一方法。（文献：A，第3.2章）
Correct. Increasing the coverage of the code with tests is the only solution for this problem. (Literature: A, Chapter 3.2)

C) 错误。通过流水线运行小规模测试会导致测试覆盖率不佳，并可能在生产环节中导致许多问题。这阻碍了流水线的采用。
Incorrect. Letting the pipeline run with a small set of tests creates poor testing coverage and potentially creates many issues in production. This hinders the adoption of the pipeline.

D) 错误。部署流水线旨在将可用代码交付至生产，而不仅仅是测试和QA，因此与目标不符。
Incorrect. The deployment pipeline aims to deliver working code to Production, not just to test and QA, so it will not fit its purpose.

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一个好的版本控制系统是DevOps中最佳的高绩效预测器之一。

哪一项是成功应用版本控制的必要条件?

A good version control system is one of the highest predictors of high performance in DevOps.

What is necessary to apply version control successfully?

A) 运用信息和配置的文化发生变化
A change in the culture of working with information and configuration

B) 显著提高变更实施的速度
A significant increase in the speed of change implementation

C) 刻意将混沌和不稳定引入生产
The deliberate introduction of chaos and instability in Production

D) 采用正式的自动化变更管理流程
The use of a formalized and automated change management process

题目未完，接下一页

A) 正确。版本控制允许控制运行中系统的所有相关部分，而其他工具无法实现。完成出色的版本控制需要改变运用信息和配置的文化。（文献：A，第3.3章）
Correct. Versioning allows for control over all the relevant parts of the system in operation, unattainable with other tools. Version control done well requires a change in the culture of working with information and configuration. (Literature: A, Chapter 3.3)

B) 错误。由于采用虚拟云技术，过去几年的自动化程度显著提高，变更实施也有所提速，但这不是版本控制的必要原则。
Incorrect. The degree of automation has increased significantly in the last years due to the use of virtual cloud technologies, and so has the speed of the change implementation, but that is not a required principle for version control.

C) 错误。DevOps中有关反脆弱性的一个重要实践是刻意将混沌和不稳定性引入生产环境。这种方法有多种叫法：game day, chaos monkey, simian army。但这些都不是版本控制的必要原则。
Incorrect. One of the great practices of DevOps related to anti-fragility is the deliberate introduction of chaos and instability into the production environment. This technique is known by various names: game day, chaos monkey, simian army. None of these are required principles for version control.

D) 错误。为了应对IT基础架构的脆弱性，一些组织利用形式化和自动化的变更管理流程，以构建变更流程，并尽可能降低与变更流程实施相关的风险，但这不是版本控制的必要原则。
Incorrect. To deal with fragility in the IT infrastructure, some organizations use formalized and automated change management processes designed to structure the flow of changes and minimize the risks associated with their implementation, but that is not a required principle for version control.

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找到快速开发与维护应用可靠性之间的平衡，对于DevOps而言非常重要。

版本控制如何支持这一观点?

For DevOps, finding the balance between moving quickly and maintaining application reliability is important.

How does version control support this?

A) 通过让团队中的任何成员可以自由删除不必要的文件和文档
By allowing any member of the team to freely delete unnecessary files and documents

B) 通过允许组建小型独立和自给自足的开发团队
By allowing the formation of small independent and self-sufficient development teams

C) 通过应用专门的工具来消除或减少浪费并优化流程
By applying specialized tools to eliminate or reduce waste and optimize processes

A) 正确。版本控制让团队中的任何成员可以自由删除不必要的文件和文档，而不会有意外丢失重要信息或产品的风险。（文献：A，第3.3章）
Correct. Version control allows any member of the team to freely delete unnecessary files and documents, without the risk of accidental loss of important information or product. (Literature: A, Chapter 3.3)

B) 错误。组建小型、自给自足和多元化的团队是DevOps中的一个核心思想，但不是版本控制支持系统敏捷性和可靠性的方式。
Incorrect. Forming small, self-sufficient and diverse teams is a key idea in DevOps, but it is not the way version control supports agility and reliability of the system.

C) 错误。这是精益生产理念在IT的实际应用。运用专门的工具识别浪费；然后应用其他专门的工具来消除或减少浪费。但是，这不是版本控制支持系统敏捷性和可靠性的方式。
Incorrect. This is a practical application of Lean production ideas to IT. Use specialized tools to identify waste; then apply other specialized tools to eliminate or reduce waste. However, this is not the way version control supports agility and reliability of the system.

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配置管理的益处是什么?

What benefit does configuration management have?

A) 允许任何团队成员无风险地删除不需要的文件。
It allows any team member to delete unwanted files without risk.

B) 允许主要团队成员缺席而不会出现问题。
It allows key team members to be absent without problems.

C) 允许团队成员查看谁在哪个日期更改哪些代码。
It allows team members to see who changed which code at what date.

A) 错误。版本控制允许任何团队成员自由删除信息。如果出现任何问题，可以恢复以前的版本。
Incorrect. It is version control that allows any team member to freely delete information. If anything goes wrong, the previous version can be restored.

B) 正确。当所有变更都由配置管理控制时，系统会在必要时自动恢复到先前的稳定状态。此外，如果关键团队成员离队，他们的知识不会丢失，而是保留于配置中。（文献：A，第3.4章）
Correct. When all changes are controlled by configuration management, the system is automatically restored to a previous stable state if necessary. In addition, if key team members leave, their knowledge is not lost, but solidified in the configuration. (Literature: A, Chapter 3.4)

C) 错误。记录何人在何时更改哪些内容属于版本控制，不属于配置管理。
Incorrect. The records of what was changed when and by whom are part of version control and not of configuration management.

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配置管理可以扩展IT基础架构和软件系统，且不需要更多人员。

在这样的扩展环境上，变更的理想完成方式是?

Configuration management makes it possible to scale IT infrastructure and software systems, without needing more people working on them.

How should changes to such a scaled environment ideally be done?

A) 通过持续集成
Through continuous integration

B) 通过完全控制的脚本
Through fully controlled scripts

C) 通过测试自动化
Through test automation

D) 通过部署流水线
Through the deployment pipeline

题目未完，接下一页

A) 错误。持续集成是实施部署流水线的第二个阶段，但不是应该允许管理员更改生产中任何内容的唯一方式。理想情况下，这都是通过自动化脚本完成的。
Incorrect. Continuous Integration is the second stage in implementing a deployment pipeline, but not the only way administrators should be allowed to change anything in production. Ideally this is all done by automated scripts.

B) 正确。事实上，可以说甚至连管理员在生产中也不应再拥有权限。除非通过完全控制（和自动化）的脚本，否则不应允许管理员进行任何更改。（文献：A，第3.3、3.4章）
Correct. In fact, it can be argued that even administrators no longer should have rights in production. They should not be allowed to change anything except through fully controlled (and automated) scripts. (Literature: A, Chapter 3.3, 3.4)

C) 错误。测试自动化是实施部署流水线的第三个阶段，但不是应该允许管理员更改生产中任何内容的唯一方式。理想情况下，这都是通过自动化脚本完成的。
Incorrect. Test automation is the third stage in implementing a deployment pipeline, but not the only way administrators should be allowed to change anything in production. Ideally this is all done by automated scripts.

D) 错误。从抽象层面来说，一个运行良好且完全自动化的部署流水线自动化地表现将软件从版本控制转移到用户手中的过程。但是，可能出现手动部署流水线的情况。这个并不是说明应该允许管理员更改生产中任何内容的方式。理想情况下，这都是通过自动化脚本完成的。
Incorrect. At an abstract level, a well-working and fully automated deployment pipeline is an automated manifestation of the process for getting software from version control into the hands of users. However, a manual deployment pipeline is possible. It is not a description of the way administrators should be allowed to change anything in production. Ideally this is all done by automated scripts.

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从客户价值角度来讲，明确的"完成的定义（DoD）"在DevOps中至关重要。

哪项描述最符合DevOps中的"完成"?

A clear definition of done (DoD) is critical in DevOps and considers the value for the customer.

What is a good description of 'done' for DevOps?

A) 当创建完毕后即需求完成。
A requirement is done when it has been built.

B) 当测试完毕后即需求完成。
A requirement is done when it has been tested.

C) 当产品通过验收后即需求完成。
A requirement is done when the product is accepted.

D) 当产品发布到生产环境时即需求完成。
A requirement is done when the product is in Production.

A) 错误。在为客户创造价值之后，某事项才可以被认定为"完成"。构建只是DevOps流水线中的一个阶段，尚未获得任何附加值。
Incorrect. Something is considered 'done' when value for the customer has been added. Building is just a phase in the DevOps pipeline, no added value is obtained yet.

B) 错误。在为客户创造价值之后，某事项才可以被认定为"完成"。测试只是DevOps流水线中的一个阶段，尚未获得任何附加值。
Incorrect. A good description of Done for DevOps is to consider something Done when value for the customer has been added. Testing is just a phase in the DevOps pipeline, no added value is obtained yet.

C) 错误。在为客户创造价值之后，某事项才可以被认定为"完成"。验收只是DevOps流水线中的一个阶段，尚未获得任何附加值。
Incorrect. A good description of Done for DevOps is to consider something Done when value for the customer has been added. Acceptance is just a phase in the DevOps pipeline, no added value is obtained yet.

D) 正确。在为客户创造价值之后，某事项才可以被认定为"完成"。产品处于生产环境中时即视为完成。（文献：A，第3.5章）
Correct. A good description of Done for DevOps is to consider something Done when value for the customer has been added. This is true when the product is in the production environment. (Literature: A, Chapter 3.5)

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在传统实践中，发布可能会出现许多问题：某些变更未记录，系统未完全备份，或者系统以前的状态未保存。

DevOps如何确保频繁发布的同时不出现此类问题?

In traditional practices many things can go wrong with releases: some changes are not documented, the system has not been backed up fully, or there is no previous state of the system saved.

How does DevOps ensure frequent releases without these problems?

A) 通过自动化发布
By automating releases

B) 通过让运维来发布
By letting Operations release

C) 通过小规模发布
By making releases very small

D) 通过不记录所有变更
By not documenting all changes

题目未完，接下一页

A) 正确。自动化是确保发布频繁并且发布流程成为常规的重要因素。如果备份、记录和回滚的所有人为因素都实现自动化，则发布出现问题的可能性将大大降低。如果无法成功实施发布，系统将提醒团队采取行动。（文献：A，第4.1章）
Correct. Automation is an important factor in ensuring that releases are frequent and that the release process becomes routine. If all human factors of backing up, documenting and rolling back are automated, the chances of problems with releasing diminish dramatically. If a release cannot be implemented successfully, the system will alert the team to act. (Literature: A, Chapter 4.1)

B) 错误。给予运维部控制权并不能防止上述问题。考虑授权运维部并将开发部整合到运维部的实践中，可以清楚了解发布流程的哪些环节需要自动化和标准化。只是将发布交托给运维部并不能解决上述问题。
Incorrect. Giving Operations control does not prevent the mentioned problems. Looking at Operations and integrating Development into their practices may shed light on which parts of the release process need automating and standardization. Just handing over releasing to Operations will not solve the problems mentioned.

C) 错误。在常规发布工作方面，发布的规模没有发布自动化重要。小规模发布不一定能防止所述的任何问题。频繁发布会使发布规模变小。
Incorrect. The size of the release does not matter as much as the automation to make the routine releases work. The smaller releases will not necessarily prevent any of the problems mentioned. Releasing frequently will make the releases smaller.

D) 错误。这会加剧问题。引入版本控制系统（最好是自动化系统）将有助于消除由于文件记录不当引起的问题。
Incorrect. This will make the problems worse. Introducing a versioning system, preferably automated, will help eliminate the problems caused by improper documentation.

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一个公司采用持续部署。

应该由谁决定何时发布新功能?

A company uses continuous deployment.

Whose decision should it be when to release new functionality?

A) 业务
The business

B) 客户
The customer

C) IT部门
The IT department

D) 用户
The user

A) 正确。在采用持续部署时，发布待用的新功能将是一种业务决策。在业务决定是时候切换功能之前，该功能可能已经部署了一段时间。IT部门按自己节奏发布，由业务来决定何时发布新功能。（文献：A，第4.1章）
Correct. Releasing new functionality to be used becomes a business decision when using continuous deployment. The functionality may already have been deployed for a time before the business decides that it is time to switch the functionality on. The IT department releases in their own tempo, the business decides when to release new functionality. (Literature: A, Chapter 4.1)

B) 错误。虽然这个利益干系人对决策很重要，但发布主要是业务决策。
Incorrect. Although this stakeholder is important for the decision, releases are primary a business decision.

C) 错误。虽然这个利益干系人对决策很重要，但发布主要是业务决策。
Incorrect. Although this stakeholder is important for the decision, releases are primary a business decision.

D) 错误。虽然这个利益干系人对决策很重要，但发布主要是业务决策。
Incorrect. Although this stakeholder is important for the decision, releases are primary a business decision.

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根据DevOps实践，什么是提高运维控制水平的**最佳**方法?

According to DevOps practices, what is the **best** way to increase the level of operational control?

A) 将人工操作全部自动化
Automating all manual operations

B) 定义适当的角色和职责
Defining appropriate roles and responsibilities

C) 设计控制流程和步骤
Designing control procedures

D) 改善运维治理
Improving operational governance

A) 正确。将尽可能多的操作自动化将实现全面控制，因为所有操作都是即时且统一的。当操作未达最佳标准时，更改自动化也将改变所有未来操作。（文献：A，第4.1.3章）
Correct. Automating as many operations as possible will give total control, because all operations become instant and uniform. When an operation is suboptimal, changing the automation will also change all future operations. (Literature: A, Chapter 4.1.3)

B) 错误。尽管定义角色和职责很重要，但并不直接影响对所有操作的控制。
Incorrect. Although defining roles and responsibilities is important, it does not directly impact the control over all operations.

C) 错误。只是设计流程步骤无济于事。流程步骤设计后，应该实现自动化，从而避免出错，保证所有操作都是统一的。
Incorrect. Just designing procedures will not help. Once the procedures are designed, they should be automated so no errors are made, and all operations are uniform.

D) 错误。虽然这可能以某种方式令人满意，但单单治理并不会给予更多控制。自动化确保完全控制。
Incorrect. Although this may be desirable anyway, just governing does not give more control. Automation ensures total control.

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DevOps解决突发事件的方式是什么?

What is the DevOps way of solving incidents?

A) 上报至问题管理团队并创建解决方案，直到他们解决事件。
Escalate to the problem management team and create a solution until they solve the incident

B) 调查突发事件，运行诊断程序，然后确定并实施变通方案。
Investigate the incident, run diagnostics, then identify and implement a workaround

C) 查看相关突发事件是否以前发生过并实施类似的问题解决方案。
See if a related incident occurred earlier and implement a similar solution to the problem

D) 将事件追溯到最近的部署，并将系统回滚到先前的稳定状态。
Trace the incident back to a recent deployment and roll the system back to a previous stable state

A) 错误。此解决方案可能最终得到一项可用的变通方案，在这种情况下，真正的问题可能永远无法得到解决。
Incorrect. This solution may lead to a working workaround, in which case the real problem may never get solved.

B) 错误。实施变通方案并不能解决事件，不应该采取这种操作。
Incorrect. Implementing a workaround does not solve the incident. This is not how one should operate.

C) 错误。这种解决方案很可能是一种变通方案，并不令人满意。不应该空等其他人来修复问题。
Incorrect. The solution is most likely a workaround, which is not desirable. One should not wait until someone else fixes the problem.

D) 正确。根据文献，“如果事件追溯到最近的部署，流水线控制系统将自动回滚到先前已知的稳定状态”。无论此过程是自动还是仍然手动完成，都是必要合理的方式。（文献：A，第4.1章）
Correct. According to the literature, "In case the incident is traced back to a recent deployment, the pipeline control system will automatically roll back to the previous known stable state". This is what should happen, whether this process is automated or still done manually. (Literature: A, Chapter 4.1)

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在DevOps中，发现流程缺陷时应该怎么做?

In DevOps, what should be done when process deficiencies are found?

A) 所有变更都应提交到待办事项列表，这样可以在项目或改善（Kaizen）事件中发布。
All changes should be submitted to a backlog, so they can be released in a project or a Kaizen event.

B) 必须在发现缺陷后尽快找到并实施修复措施。
Fixes should be found and implemented as soon as possible after detection of the deficiency.

C) 必须找到修复措施，经变更经理批准，按优先级发布。
Fixes should be found, approved by the change manager, and released based on priority.

D) 必须找到修复措施，经持续改进经理批准，并立即发布。
Fixes should be found, approved by the continuous improvement manager, and released immediately.

E) 应该推迟修复，直到变更可以包含在适当的迭代中。
Fixes should be postponed until the change can be included in an appropriate iteration.

A) 错误。大型变更事件或改善事件可能会有用，但应尽快对过程进行定期变更，作为持续改进的一部分。
Incorrect. A large change event or a Kaizen event may be useful, but regular changes to the process as a part of continuous improvement should be done as quickly as possible.

B) 正确。发现流程缺陷而不修复会导致更多不必要的问题。“因此，DevOps采取了不同的做法：所有已识别的流程缺陷应立即消除。”（文献：A，第4.1章）
Correct. Not fixing process deficiencies when they have been detected leads to more problems than necessary. "Therefore, DevOps uses a different approach: all identified process deficiencies should be eliminated immediately." (Literature: A, Chapter 4.1)

C) 错误。不存在变更经理，应立即实施修复措施。
Incorrect. There is no change manager and the fixes should be implemented immediately.

D) 错误。不存在持续改进经理批准任何修复措施。
Incorrect. There is no continuous improvement manager to approve any fixes.

E) 错误。推迟不是一个好主意，会造成系统效率低下并对工作产生负面影响。
Incorrect. Postponing is not a great idea. It keeps the system inefficient and impacts the work negatively.

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哪一种做法**无法**帮助DevOps团队成功开发和交付工作软件?

What does **not** help a DevOps team to successfully develop and deliver working software?

A) 在项目期间组建一支短期的DevOps团队
Forming a DevOps team for a short period of time during a project

B) 识别、修复错误并立即吸取教训
Identifying, fixing and learning from errors as soon as they are found

C) 围绕组织使命组建DevOps团队
Organizing DevOps teams around an organizational mission

D) 编写代码，以软件具有内建品质作为主要目标
Writing code for software to have built-in quality as a main goal

A) 正确。DevOps团队为更长的周期而组建。这使他们有机会在未来利用自己的经验更快地交付新软件并不断创新。（文献：A，第4.2章）
Correct. DevOps teams are formed for a longer period. This gives them the opportunity to use their experience in the future to deliver new software quicker and to keep innovating. (Literature: A, Chapter 4.2)

B) 错误。批次越小，越容易发现错误并立即纠正。DevOps注重快速找到错误，过程中立即修复错误并优化流程的精益流程。
Incorrect. When batches are smaller, errors can be found more easily and corrected immediately. DevOps focuses on the Lean process of finding errors fast, fixing them in the process immediately and optimizing the process.

C) 错误。DevOps的主要优势之一是团队通过让自己的工作符合特定的组织目标来为企业增加价值。
Incorrect. One of DevOps's main advantages is that the team adds value to the business by aligning their work to a specific organizational goal.

D) 错误。注重内建品质是DevOps所结合的精益生产特质。为了保证品质，编写代码可能需要更长的时间，但由于发现的错误变少，系统构建变强，最终会实现价值增加。
Incorrect. Focusing on built-in quality is a Lean property incorporated by DevOps. When one is coding for quality, it may take longer, but because fewer bugs are found and the system is built to be more robust, this adds value in the end.

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DevOps建议将实施的工作可视化。

可视化可以实现哪**两个**目标?

请记住选择2个备选答案。

DevOps recommends visualization of the work done.

Which **two** goals can be realized by visualization?

Please remember to choose 2 answers.

A) 构建拉式系统
Building a pull-system

B) 划分工作
Dividing the work

C) 激励承诺
Fostering commitment

D) 确定低效现象
Identifying inefficiencies

E) 通知客户
Informing the customer

题目未完，接下一页

A) 正确。这是采用可视化的益处。可视化允许构建拉式系统，从而改善工作流程；减少停滞时间；降低协调需要。可视化还有助于识别低效现象。（文献：A，第4.3章）
Correct. This is a benefit of using visualization. Visualizing allows to build a pull system, which in turn: improves the workflow; reduces downtime; reduces the need for coordination. Visualization also helps to identify inefficiencies. (Literature: A, Chapter 4.3)

B) 错误。团队可以有效地划分工作而无需可视化。承诺不是通过可视化来激励的，尽管这点对于DevOps的成功十分重要。客户之声（Voice of the Customer）或企业之声（Voice of the Business）代表人应该更新客户。
Incorrect. A team can effectively divide the work without visualization. Commitment is not fostered by visualization, although it is important for DevOps to be successful. The person acting as Voice of the Customer or Voice of the Business should update the customer.

C) 错误。团队可以有效地划分工作而无需可视化。承诺不是通过可视化来激励的，尽管这点对于DevOps的成功十分重要。客户之声（Voice of the Customer）或企业之声（Voice of the Business）代表人应该更新客户。
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D) 正确。这是采用可视化的益处。可视化允许构建拉式系统，从而改善工作流程；减少停滞时间；降低协调需要。可视化还有助于识别低效现象。（文献：A，第4.3章）
Correct. This is a benefit of using visualization. Visualizing allows to build a pull system, which in turn: improves the workflow; reduces downtime; reduces the need for coordination. Visualization also helps to identify inefficiencies. (Literature: A, Chapter 4.3)

E) 错误。团队可以有效地划分工作而无需可视化。承诺不是通过可视化来激励的，尽管这点对于DevOps的成功十分重要。客户之声（Voice of the Customer）或企业之声（Voice of the Business）代表人应该更新客户。
Incorrect. A team can effectively divide the work without visualization. Commitment is not fostered by visualization, although it is important for DevOps to be successful. The person acting as Voice of the Customer or Voice of the Business should update the customer.

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哪一项**不**是限制在制品（WIP）的原因?

What is **not** a reason to keep the work in progress (WIP) limited?

A) 减少生产力的损失
To decrease loss of productivity

B) 帮助消除约束
To help eliminate constraints

C) 有助于流的节奏
To help the rhythm of the flow

D) 提高资源利用率
To increase resource utilization

A) 错误。通过限制WIP，团队成员可以更专注于处理单个事项。这有助于阻止因任务切换带来的不必要的中断，并最终提高生产力。
Incorrect. By limiting WIP, there is more focus for the team members to work on a single item. This helps to stop unnecessary interruptions by task switching and ultimately leads to more productivity.

B) 错误。限制WIP更便于快速修复错误并在任务间隔优化系统。
Incorrect. Limiting WIP makes it easier to quickly fix errors and optimize the system between tasks.

C) 正确。这不是限制WIP的益处之一。（文献：A，第4.4、4.5章）
Correct. This is not one of the benefits of limiting WIP. (Literature: A, Chapter 4.4 and 4.5)

D) 错误。通过限制WIP，团队成员可以更专注于处理单个事项。这有助于阻止因任务切换带来的不必要的中断，并最终优化资源利用率。
Incorrect. By limiting WIP, there is more focus for the team members to work on a single item. This helps to stop unnecessary interruptions by task switching and ultimately leads to a better use of resources.

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在处理待办事项时，DevOps团队应该考虑哪些需求?

Which requirements should a DevOps team consider when working on a backlog item?

A) 非功能性需求和功能性需求
Both non-functional and functional requirements

B) 既不是非功能性需求也不是功能性需求
Neither non-functional nor functional requirements

C) 仅功能性需求
Only functional requirements

D) 仅非功能性需求
Only non-functional requirements

A) 正确。应同时考虑功能性需求和非功能性需求。（文献：A，第4.6章）
Correct. Both functional and non-functional requirements should be considered. (Literature: A, Chapter 4.6)

B) 错误。应同时考虑功能性需求和非功能性需求。
Incorrect. Both functional and non-functional requirements should be considered.

C) 错误。应同时考虑功能性需求和非功能性需求。
Incorrect. Both functional and non-functional requirements should be considered.

D) 错误。应同时考虑功能性需求和非功能性需求。
Incorrect. Both functional and non-functional requirements should be considered.

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哪一项属于让DevOps团队长期合作而带来的优势?

What is an advantage of having a DevOps team work together for a longer period?

A) 团队不再需要改进流程。
The team does not have to improve the process anymore.

B) 团队利用他们的经验来创新和改进流程。
The team uses their experience to innovate and improve the process.

C) 团队将开始更独立地工作。
The team will start working more independently.

D) 有时间更多地处理意外请求。
There is time left to process unexpected requests more often.

A) 错误。DevOps团队总是希望改进。这是持续改进的目的。一个长期合作的团队甚至可以更自信地改变常规和改进流程。
Incorrect. DevOps teams are always looking to improve. That is what continuous improvement is for. A team that works together for longer may even feel more confident changing routines and improving processes.

B) 正确。长期合作的DevOps团队有机会在未来的开发中利用自己的经验，更快地交付并创新流程。（文献：A，第4.9章）
Correct. DevOps teams that work together longer have the opportunity to use their experience in future development and to deliver more quickly and innovate the processes. (Literature: A, Chapter 4.9)

C) 错误。一起工作并不意味着团队更独立地工作。他们需要坚守指导方向的组织使命。除此之外，他们应该从一开始就自给自足。
Incorrect. Working together does not mean that the team works more independently. They have the organizational mission to adhere to for direction. Other than that, they should be self-sufficient from the start.

D) 错误。根据优先级规划待办事项的批次。处理许多意外请求绝不该是DevOps中的目标。请求应列入待办事项列表并按优先级排序。然后再在下一个迭代周期中着手处理。
Incorrect. A batch is planned with backlog items according to their priority. Processing many unexpected requests should never be a goal in DevOps. The requests should go in the backlog and be prioritized. Only then should they be taken up in the next iteration.

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团队以一周为一个迭代周期，频频遭遇瓶颈。

团队在识别瓶颈后，哪种应对方式**最恰当**?

The team works in one-week iterations and frequently encounters bottlenecks.

What is the **best** reaction of the team after they identify a bottleneck?

A) 识别瓶颈后尽快消除瓶颈
Eliminate the bottleneck as soon as possible after it is identified

B) 只延长发现瓶颈的迭代周期
Lengthen only the iteration in which a bottleneck is found

C) 限制一个批次中的常规任务数量来减小批次大小
Limit the regular number of tasks in a batch to reduce batch size

D) 运用可视化工具以及在制品（WIP）限制
Use visualization tools along with work-in-progress limits (WIP-limits)

A) 正确。应尽快找到导致瓶颈的原因并将其消除。当瓶颈消除后，工作甚至可以在承诺的迭代周期内完成，尽管这并不常见。（文献：A，第4.11章）
Correct. Finding ways to eliminate the cause of the bottlenecks should be done as fast as possible. When the bottleneck is eliminated, the work could even get done in the iteration it was promised, although this is not common. (Literature: A, Chapter 4.11)

B) 错误。在这种情况下，这不是处理问题的最佳方式。Scrum允许偶尔延长迭代周期。然而，DevOps比Scrum更注重建立节奏。因此，只在万不得已的情况下延长迭代周期。
Incorrect. In this case, that is not the best way of dealing with the problem. Scrum allows occasional extensions of the iteration length. However, in DevOps there is even more focus on establishing rhythm than in Scrum. Therefore, one should only extend the iteration as a last resort.

C) 错误。限制批次尺寸有助于识别导致瓶颈的问题。不过，这个应该作为DevOps实践的一部分来实施，而不是等到团队识别瓶颈之后才实施。
Incorrect. Limiting the batch size helps to identify the problems causing the bottlenecks. It should be implemented as part of DevOps practices, though. It should not only be implemented after the team has identified a bottleneck.

D) 错误。这有助于识别瓶颈，但应等到团队识别瓶颈之后才实施。
Incorrect. This helps to identify bottlenecks, but it should not be implemented after the team has identified a bottleneck.

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何时运用DevOps进行组织和技术变革会导致混沌和失控?

When can the use of DevOps for organizational and technological changes lead to chaos and loss of control?

A) 当组织的核心业务高度依赖于信息技术时
When the core business of the organization highly depends on information technology

B) 当组织变得复杂并想要解决长期累积形成的问题时
When the organization is complex and wants to solve chronic problems

C) 当组织需要快速变更以测试新的商业构思或假设时
When the organization requires rapid changes to test new business ideas or hypotheses

D) 当组织使用的信息技术变化率较高时
When the rate of change in the information technology used by the organization is high

A) 错误。当核心业务高度依赖信息技术时，组织（应该）开始关注DevOps。
Incorrect. Organizations (should) become interested in DevOps when the core business is highly dependent on information technology.

B) 正确。在复杂的情况下，DevOps极有可能不会带来太多利益，势必无法速效致胜。长期累积的问题应该细心谨慎，策划周详，妥善明智解决。不应该奢望DevOps是解决所有问题的万能法宝。（文献：A，第5.1章）
Correct. For complex situations, DevOps most likely will not bring much profit and will definitely give no quick wins. Chronic problems should be solved carefully, thoughtfully and judiciously. One should not just hope that DevOps is a magical cure for all problems. (Literature: A, Chapter 5.1)

C) 错误。当核心业务需要快速变更以测试新的商业构思或假设时，组织（应该）开始关注DevOps。
Incorrect. Organizations (should) become interested in DevOps when the main business requires rapid changes to test new business ideas or hypotheses.

D) 错误。当组织使用的信息技术变化率较高时，组织（应该）开始关注DevOps。
Incorrect. Organizations (should) become interested in DevOps when the rate of change occurring in the IT used, is high.

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公司关注DevOps的原因有很多。

公司应该在什么情况下开始关注DevOps?

There are many reasons for a company to become interested in DevOps.

When should companies become interested in DevOps?

A) 当敏捷实践不适合组织时
When Agile practices do not seem to fit the company

B) 当其他实践方法不能帮助组织实现预期结果时
When no other method gives the necessary results

C) 当组织在实施Scrum和精益实践之后
When Scrum and Lean practices have been implemented

A) 错误。在这种情况下组织的确应该认真评估是否应该选择DevOps实践。在敏捷实践不适合企业时，尝试DevOps实践虽然没有任何害处但由于DevOps实践包含许多敏捷概念，因此DevOps也不一定适用于该组织。
Incorrect. This should be a trigger to seriously reconsider DevOps practices for a company. When Agile practices do not seem to be relevant to a company, there is no harm in looking into DevOps practices. However, since DevOps practices include many Agile concepts, DevOps may not be for that company.

B) 正确。当尝试过所有其他提高效率的方法不见效时，公司（应该）开始尝试DevOps。即使这不是开始采用DevOps实践的最佳理由，但在没有其他有效方法时，绝对应该考虑DevOps。（文献：A，第5.1章）
Correct. Companies (should) become interested in DevOps when all other tried-and-tested methods of increasing effectiveness no longer give significant results. Even though this is not the best reason to start using DevOps practices, DevOps should definitely be investigated when nothing else works. (Literature: A, Chapter 5.1)

C) 错误。没有必要等到实施Scrum和精益实践后才开始DevOps实践。事实上，许多DevOps实践都依源自Scrum和精益概念。这些实践应该紧密结合。DevOps提倡组织选择在该组织中最有效的方法。
Incorrect. There is no need to wait until Scrum and Lean practices are implemented to start DevOps practices. In fact, many of the DevOps practices will rely on Scrum and Lean concepts. They should work with each other seamlessly. DevOps allows the company to choose whatever works best in that company.

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组织采用DevOps时，什么可能会使之遇到困难?

What can cause difficulties when DevOps is adopted?

A) 跨职能团队
Cross-functional teams

B) 虚拟化技术的使用受限
Limited use of virtualization

C) 微服务架构
Microservice architecture

A) 错误。DevOps团队是跨职能的；拥有跨职能团队给组织在DevOps实践中一个良好的开端。
Incorrect. DevOps teams are cross-functional; having cross-functional teams gives organizations a head start in DevOps.

B) 正确。少用虚拟化技术的组织将难以实施DevOps实践。（文献：A，第5.1章）
Correct. Organizations using little virtualization will have difficulties implementing DevOps practices. (Literature: A, Chapter 5.1)

C) 错误。微服务架构源自一套通用的DevOps思想，给组织在DevOps实践中一个良好的开端。
Incorrect. Microservice architecture emerged from a common set of DevOps ideologies gives organizations a head start in DevOps.

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组织中的许多员工仍以单一实体的形式来开发和维护IT系统。

在这种情况下，可以预知采纳DevOps实践会遇到什么困难?

An IT system is still being developed and maintained by many employees as a single entity.

What difficulty with adopting DevOps practices can be expected?

A) 分配DevOps团队不同责任范围
Assigning DevOps teams to separate areas of responsibility

B) 创建跨职能团队以处理组织结构
Creating cross-functional teams to work on the organizational structure

C) 维护和版本控制多个API以实现向后兼容
Maintaining and versioning multiple APIs for backward compatibility

A) 正确。实施DevOps实践的一个重大障碍是单体、刚性结合的IT架构。引入小型团队需要能够为每个团队分配不同的责任范围。在我们所讨论的IT系统仍由数十或数百名员工作为单一实体进行开发和维护的情况下，将难以为不同步工作的各个独立团队划分工作。（文献：A，第5.1章）
Correct. A significant obstacle for the implementation of DevOps practices is a monolithic, rigidly bound IT architecture. Introduction of small teams requires the ability to assign a separate area of responsibility to each of them. In a situation where the IT system in question is still being developed and maintained by dozens or hundreds of employees as a single entity, it will be difficult to separate parts for individual independent teams that work asynchronously. (Literature: A, Chapter 5.1)

B) 错误。跨职能团队本身的创建不存在任何障碍。
Incorrect. There is no inhibition in the creation of cross-functional teams themselves.

C) 错误。采用单体应用，开发人员只需更改分类名称和API。采用微服务，开发人员则必须更改API的版本号并维护多个API以实现向后兼容。在本例中，微服务还未实施，所以并不是预期的问题。此外，尽管可能需要一个系统进行版本控制，但问题不在于此，而在于进展情况和预期结果以及实施DevOps实践的益处。
Incorrect. With a monolithic application, developers must only chnage the class name and API. With microservices, developers must change the version number of the API and maintain multiple APIs for backward compatibility. In this case, no microservices have been implemented yet, so this is not an expected problem. In addition, although it may require a system for versioning, this is not a problem, but progress and an expected result and ultimately benefit of implementing DevOps practices.

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商业现成软件（COTS）用于快速获取所需的结果，因为开发软定制件需要耗费大量时间。

关于COTS的说法哪一项是**正确**的?

Commercial off-the-shelf software (COTS) is used to quickly get the results needed, because it takes time to develop custom software.

What is **true** about COTS?

A) COTS需要定制，并使用脚本来配置系统。
COTS requires customization and scripting to configure the system.

B) COTS应该用于支持战略业务线。
COTS should be used to support strategic business lines.

C) 使用现成软件一般更加灵活。
Using ready to use software is generally more flexible.

D) 使用现成软件通常要便宜得多。
Using ready to use software is usually much cheaper.

A) 正确。使用脚本语言可以配置此类软件。但是，可能存在限制，而且配置系统仍需要时间。（文献：A，第5.2章）
Correct. With scripting it is possible to configure this kind of software. However, there might be limitations and configuring the system still takes time. (Literature: A, Chapter 5.2)

B) 错误。现成软件不会自动支持战略业务线。脚本语言是实现这一点（如有可能）的必要条件。建议不要将COTS用于战略业务线。
Incorrect. Off-the-shelf software will not automatically support strategic business lines. Scripting will be necessary to make that possible (if it is possible at all). It is recommended not to use COTS for strategic business lines.

C) 错误。商业现成软件始终会限制灵活性。并不总是可以按照团队想要或需要的方式进行配置。
Incorrect. Commercial off-the-shelf software is always limiting flexibility. It is not always possible to configure it the way the team wants or needs to.

D) 错误。配置此类软件需要时间，这意味着额外工作量和额外费用。此外，企业实际需要的价值可能无法实现。
Incorrect. Configuring such software will take time, which means extra effort and extra expenses. In addition, the value the business actually needs may not be delivered.

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刚性或单体IT架构有什么困难?

What is a difficulty of a rigid or monolithic IT architecture?

A) 改变和开发IT架构本身很难做到
Changing and developing the IT architecture itself is difficult to do

B) 修改架构内的服务需要独立完成
Modifying services within the architecture is done independently

C) 在不禁用当前版本的情况下更新到新版本
Updating to a new version without disabling the current version

D) 等待所有组件准备就绪进行大规模迁移
Waiting for all components to be ready for a large-scale migration

A) 正确。这是刚性IT架构存在的问题。架构越大刚性越强，改变任何内容就越困难，同时还得看这种改变对架构的其余部分产生的影响。（文献：A，第5.3章）
Correct. This is a problem of a rigid IT architecture. The larger and more rigid the architecture, the more difficult it becomes to change anything, whilst still seeing what that change does to the rest of the architecture. (Literature: A, Chapter 5.3)

B) 错误。这是问题的解决方案。当所有服务都可以独立修改时，架构不再具有刚性。
Incorrect. This is a solution of the problem. When all services can be modified independently, the architecture is no longer rigid.

C) 错误。即使架构不具刚性，这也还是一个挑战。
Incorrect. This can be a challenge even when the architecture is not rigid.

D) 错误。当进行大规模迁移时，IT架构并不一定是刚性的，所有组件都应该为此做好准备。这可能发生在任何类型的IT架构中。
Incorrect. It is not necessarily rigid when a large-scale migration is done and all components should be made ready for that. This could happen in any type of IT architecture.

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建议组织自定义并选择适用于该组织的DevOps实践。必须提出关于该组织的针对性问题，而且必须找到关于该组织的针对性答案。

为什么说这是一个好主意?

It is recommended that organizations customize and select DevOps practices that work in that organization. Organization-specific questions must be raised and organization-specific answers must be found.

Why is this a good idea?

A) 因为有关DevOps的出版物并不能总是反映组织的实际情况，还会少报困难和失败
Because DevOps publications do not always reflect reality and underreport difficulties and failures

B) 因为这是成为一个可受雇来实施DevOps的DevOps工程师的途径
Because that is the way to become a DevOps engineer that can be hired for implementing DevOps

C) 因为管理团队最了解如何在其组织中实施DevOps
Because the management teams know best how to implement DevOps in their own organization

D) 因为关于DevOps的出版物和活动过少而无法形成独立的意见
Because there are too few publications and events about DevOps to form independent opinions

A) 正确。绝大多数文献并不一定能让团队为现实可能带来的所有困难和失败做好准备。过滤掉多余的信息并选择最适合组织情况的信息非常重要。（文献：A，第5.6章）
Correct. The overwhelming amount of literature does not necessarily prepare the team for all struggles and failures reality may pose. It is important to filter your information and see what applies to the organization's situation most. (Literature: A, Chapter 5.6)

B) 错误。DevOps无法"实施"，也没办法雇佣工程师给IT带来新秩序。
Incorrect. DevOps cannot be implemented and there is no engineer that can be hired to bring the new order to IT.

C) 错误。相反，有许多出版物和活动可以帮助组织做出决定。
Incorrect. On the contrary, there are many publications and events to help the organization to decide.

D) 错误。不存在实施DevOps这一说法。
Incorrect. There is no such thing as implementing DevOps.

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一个组织拥有遗留IT基础架构，他们希望开始采用DevOps。

在该类组织中，常见的做法是什么?

An organization has a legacy IT infrastructure. They want to start with DevOps.

What is a common approach in such an organization?

A) 开始将DevOps作为软件产品实施，安装并启动
To start implementing DevOps as a software product, install it and start it

B) 开始采用至少执行装配和初始测试的基本流水线
To start with a basic pipeline that performs at least assembly and initial testing

C) 首先选择优化机会最大的产品
To start with a selection of the product with the greatest opportunities for optimization

D) 首先识别那些与其他系统松耦合的系统
To start with identifying those systems that are loosely connected with others

E) 首先分配一定比例的工作时间进行改进
To start with the allocation of a certain proportion of working time for the improvement

A) 错误。DevOps不是可以安装和启动的软件产品。
Incorrect. DevOps is not a software product that can be installed and started.

B) 错误。这不是开始采用DevOps的方式，而是针对可自动化的流部分构建部署流水线所必需的。
Incorrect. This is not an approach to start with DevOps. This is required to proceed with the building of the deployment pipeline for the part of the stream that can be automated.

C) 错误。这是绘制价值流图的开端。
Incorrect. This is the start of developing the value stream mapping.

D) 正确。DevOps可以从任何阶段开始，无论企业现状如何。识别松耦合的系统是第一步。（文献：A，第5.6章）
Correct. DevOps can start anywhere, wherever the business is now. Identifying loosely connected systems is the first step. (Literature: A, Chapter 5.6)

E) 错误。这与技术债务有关。
Incorrect. This relates to the technical debt.

试题评分

如下表格为本套样题的正确答案，供参考使用。

问题	答案	问题	答案
1	C	**21**	D
2	B	**22**	A
3	B	**23**	A
4	C	**24**	A
5	B	**25**	D
6	B	**26**	B
7	C	**27**	A
8	D	**28**	A & D
9	A	**29**	C
10	C	**30**	A
11	D	**31**	B
12	C	**32**	A
13	A	**33**	B
14	E	**34**	B
15	C	**35**	B
16	B	**36**	A
17	A	**37**	A
18	A	**38**	A
19	B	**39**	A
20	B	**40**	D

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