考试样卷

202211 版本

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考试说明

本试卷是 EXIN DevOps Professional (DEVOPSP.CH)试题。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。

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 90 分钟。

祝您好运!

考试样卷

1 / 40
敏捷宣言的原则是什么?

What is a principle of the Agile Manifesto?

A) 创建持续和动态学习的文化。
To create a culture of continual and dynamic learning.
B) 在工作系统中生成反馈和前馈回路。
To create feedback and feedforward loops into our system of work.
C) 高频次交付可工作的软件，间隔从几星期到两三个月。
To deliver working software frequently, from a couple of weeks to a couple of months.
D) 使工作可见，缩小批次尺寸并缩短工作间隔，构建质量，从而增强流动。
To increase flow by making work visible, by reducing batch sizes and intervals of work, and by building quality.

2 / 40
"将日常工作的改进制度化"属于三步工作法中的哪一步?

To which of the Three Ways does "institutionalizing the improvement of daily work" belong?

A) 持续学习和实验
Continuous learning and experimentation
B) 反馈
Feedback
C) 流
Flow

3 / 40
交互系统(SoE) 和记录系统(SoR) 在变更速度上有何区别?

What is the difference between a System of Engagement (SoE) and a System of Records (SoR) in terms of pace of change?

A) 一般而言，SoE和SoR的变更速度同步。
SoE and SoR typically have the same pace of change.
B) 一般而言，SoE的变更速度显著高于SoR。
SoE typically has a much higher pace of change than SoR.
C) 一般而言，SoE的变更速度显著低于SoR。
SoE typically has a much lower pace of change than SoR.
D) SoE和SoR间变更速度的关系取决于不同的信息系统。
This relationship differs per information system.

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让开发和运维使用共享工具的益处是什么?

What is a benefit of having Development and Operations using a shared tool?

A) 生成统一的待办事项列表，便于每个人从全局角度优先考虑改进项目。
A unified backlog, where everyone prioritizes improvement projects from a global perspective.
B) 开发人员能够得到关于应用程序在生产环境中运行表现的反馈，其中包括生产中断时的修复。
Developers get feedback on how their applications perform in production, which includes fixing it when it breaks.
C) 使团队能够在正常的营业时间内进行部署并进行简单的转换。
Enabling the team to perform deployments during normal business hours and conducting simple changeovers.
D) 将运维的知识转换为自动化代码，这样更加可靠，并且可以被广泛地重复使用。
Transforming Operations knowledge into automated code that can be far more reliable and widely reused.

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将运维能力更好地赋能给开发团队，可以产生更多以市场为导向的成果，提高效率和生产力。

哪一项是实现这一点**最**有效的方法?

More market-oriented outcomes can be created by better integrating Operations capabilities into Development teams, making both more efficient and productive.

Which approach would **best** accomplish this?

A) 为运维团队派遣一名开发联络员
Assign a Development liaison to the Operations team
B) 创建基础架构自服务
Create infrastructure self-services
C) 将运维团队外包
Outsource the Operations team
D) 培训开发人员，使其能够开展运维工作
Train Developers to do the work of Operations

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由于运维工程师延误了新环境的生成，银行需要更长的时间将新的或发生变化的产品投入市场。

哪一项是关于自动生成环境的正确说法?

A bank needs longer timescales to bring new or changed offerings to market, due to delays in the creation of new environments by Operations engineers.

What is true about the automatic creation of environments?

A) 自动生成的环境可用于所有环境。
Automatically created environments can be used for all environments.
B) 由于安全限制，自动生成的环境可用于生产环境以外的所有环境。
Automatically created environments can be used for all environments except the production environment due to security restrictions.
C) 基于四眼原则，在生产中使用自动生成的环境时，DevOps要求运维人员评审。
DevOps requires a review by Operations when automatically creating environments in production due to the four eyes principle.
D) 基于四眼原则，在生产中使用自动生成的环境时，DevOps要求运维人员的手动同意。
DevOps requires the manual agreement of Operations when automatically creating environments in production due to the four eyes principle.

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价值流图过程块应包含哪种价值?

Which value should be included in a value map process block?

A) 应用程序遥测
Application telemetry
B) 完整和准确的百分比
Percent complete and accurate
C) 团队速率
Team velocity
D) 在制品（WIP）
Work in progress (WIP)

8 / 40
为了尽量降低DevOps中的业务风险，哪一项是版本控制的**主要**目标?

In order to minimize risks to the business within DevOps, what is a **main** goal of version control?

A) 配置偏离理想状态时，保证警报功能
Ensure the ability to alert when configuration changes from the desired state
B) 保证重新生成先前的最佳环境状态的功能
Ensure the ability to recreate the previous state of the test environment
C) 保证重新生成生产环境以及构建流程的功能
Ensure the ability to recreate the production environment and build processes
D) 保证不同的开发团队共享源代码的功能
Ensure the ability to share the source code between different Developer teams

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所有IT团队成员集结到一起，共同评审应进行的变更，以便进一步实施DevOps。团队成员需要就与DevOps原则相符的完成的定义（DoD） 达成一致。

哪一项完成的定义（DoD）适用于DevOps?

An IT team gets together to review some changes that should be made in order to further adopt DevOps. They must agree on a definition of done (DoD) that is aligned with the DevOps principles.

Which DoD is a proper fit for DevOps?

A) 代码已并入主分支，并通过了自动化单元测试。
The code has been integrated into the main branch and passed automated unit testing.
B) 代码在开发人员的电脑中如期运行，已通过自动化单元测试。
The code is running as expected on the Developer's laptop and passed automated unit testing.
C) 代码在类似生产的环境中运行，已通过用户验收测试。
The code is running in a production-like environment and passed user acceptance testing (UAT).

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哪一项是实现环境搭建和环境配置自动化的最有效工具?

Which tooling can **best** be used to automate the building and configuration of environments?

A) 提供开发、测试或验收环境的工单系统
A ticketing system for the provision of a development, test, or acceptance environment
B) 将生产环境设置复制到开发、测试和验收环境的工具
A tool that copies the production environment settings to the development, test, and acceptance environments
C) （为保持环境同步）各环境下手动分发和维护的配置文件
Configuration files per environment that are manually distributed and maintained in order to keep the environments in sync
D) 便于程序员自行变更环境的基础设施即代码配置管理工具
Infrastructure as code configuration management tools that enable the programmers in changing the environments themselves

11 / 40
自动化测试套件的特定设计目标是尽可能早地在测试中找到错误。理想自动化测试金字塔模型显示了须执行测试的正确顺序。

需**首先**执行哪一个测试?

A specific design goal of an automated test suite is to find errors as early in the testing as possible. The ideal testing automation pyramid shows the correct order in which the test must be performed.

Which test must be performed **first**?

A) 自动化API测试
Automated API test
B) 自动化组件测试
Automated component test
C) 自动化集成测试
Automated integration test
D) 自动化单元测试
Automated unit test

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DevOps团队希望通过测试驱动开发来提高速率。

哪一项是正确的操作顺序?

A DevOps team wants to increase velocity by using test-driven development.

Which order of actions is correct?

A) 1. 重构
2. 书写测试用例
3. 书写功能代码
1. Refactor
2. Write a test case
3. Write the functional code
B) 1. 书写功能代码
2. 书写测试用例
3. 重构
1. Write the functional code
2. Write a test case
3. Refactor
C) 1. 书写测试用例
2. 书写功能代码
3. 重构
1. Write a test case
2. Write the functional code
3. Refactor

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一家保险公司聘请DevOps专家为其DevOps团队的分支策略选择提供建议。DevOps专家评估了两种策略：

1. 优化个人生产力
2. 优化团队生产力

关于这两种策略，哪一种说法是正确的?

An insurance company hires a DevOps professional to advise the DevOps team in choosing a branching strategy. The DevOps professional evaluates two strategies:

1. Optimize for individual productivity
2. Optimize for team productivity

Which statement about these two strategies is true?

A) 两种策略产生的合并工作量是相等的。
Both strategies result in an equal amount of merging effort.
B) 策略1产生的合并工作量高于策略2。
Strategy 1 results in far more merging effort than 2.
C) 策略2产生的合并工作量高于策略1。
Strategy 2 results in far more merging effort than 1.

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一家零售公司彻底从瀑布式开发流程转向DevOps。短时间内作出了很多选择。这就产生了技术债务。例如，产品上市时间（time to market）显著增加。但也有消除诸多延误的方法。

价值流图显示20%的冲刺时间都花在移植代码上，所有代码均在单独的代码分支上实现维护。

哪种技术债务解决方案会实现更快的流动（faster flow）？

A retail company has radically changed the development process from waterfall to DevOps. Many choices have to be made in a short period of time. This is causing some technical debt. The time to market, for example, has increased dramatically. There are, however, ways to eliminate a lot of the delays.

Value stream mapping shows that 20% of the sprint time is spent on porting code, all maintained on separate code branches.

Which solution for this technical debt will result in a faster flow?

A) 采用基于主干的开发
Adopt trunk-based development
B) 在开发人员工作站复制测试故障
Reproduce test failures on Developer workstations
C) 开始金丝雀发布
Start doing canary releases
D) 使用更多遥测
Use more telemetry

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实现高生产力、可测试性和安全的架构的特征是什么?

Which is a characteristic of an architecture that enables productivity, testability and safety?

A) 定义含糊的接口
Loosely-defined interfaces
B) 紧耦合
Tightly-coupled
C) 定义明确的API
Well-defined APIs

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解决DevOps问题的**最佳的**遥测方法是什么?

What is the **best** telemetry approach to solve problems within DevOps?

A) 投资遥测工具非常重要，重点应为生产环境、部署流水线和预生产环境。
Investing in telemetry tooling is important, and it should focus on the production environment, deployment pipeline and pre-production.
B) 投资遥测工具非常重要，仅需重视生产环境。
Investing in telemetry tooling is important, and it should focus on the production environment only.
C) 投资遥测工具不重要。重点是重启成本更低的冗余服务。
Investing in telemetry tooling is not important, the focus should be on rebooting redundant services which is much cheaper.
D) 投资遥测工具不重要。重点是应用程序用户。原因在于用户提供更全面、成本更低的监控。
Investing in telemetry tooling is not important, the focus should be on the user of the application who is a much more complete and cheaper monitor provision.

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在监控框架内，应从三个层次收集数据。

哪一项**不**属于这三层?

Within the monitoring framework, data should be collected from three layers.

Which is **not** one of those three layers?

A) 应用程序
Application
B) 业务逻辑
Business logic
C) 业务指标
Business metrics
D) 运维系统
Operating system

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自助遥测帮助哪一种人员实现增值?

For which audience does self-service access telemetry add value?

A) 仅开发人员
Developers only
B) 仅开发人员和运维人员
Developers and operators only
C) 仅开发人员、运维人员和利益干系人
Developers, operators, and stakeholders only
D) 开发人员、运维人员、利益干系人以及客户
Developers, operators, stakeholders, and customers

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在兼具自动化测试、快速部署流程和充分遥测的环境下，哪一种方法为业务提供**最多**DevOps方向的益处?

In an environment that has automated testing, fast deployment processes and sufficient telemetry, which technique offers **most** DevOps benefits to the business?

A) 前滚
Fix forward
B) 回滚
Roll back
C) 移除有故障的服务器
Take broken servers out
D) 关闭故障特性
Turn off broken features

20 / 40
某软件公司编写了下列发布指导要求：

- **缺陷计数和严重程度**：应用程序是否按照设计要求运行？
- **监控范围**：发生故障时，监控范围是否足以恢复服务？
- **系统架构**：服务是否紧耦合，足以解决生产中的高事件率？
- **传呼机警报类型/频率**：应用程序是否在生产中没有生成过量警报？

哪一项发布指导要求**不**符合DevOps工作法？

A software company has composed the following launch guidance requirements:

- **Defect counts and severity**: Does the application perform as designed?
- **Monitoring coverage**: Is the coverage of monitoring sufficient to restore service when things go wrong?
- **Systems architecture**: Is the service tightly-coupled enough to solve a high rate of incidents in production?
- **Type/frequency of pager alerts**: Is the application not generating an insupportable number of alerts in production?

Which launch guidance requirement does **not** comply with the DevOps way of working?

A) 缺陷计数和严重程度
Defect counts and severity
B) 监控范围
Monitoring coverage
C) 系统架构
System architecture
D) 传呼机警报类型/频率
Type/frequency of pager alerts

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哪一项是交接就绪评审（HRR）（而**非**投产就绪评审(LRR)）的独有特点？

Which is a unique characteristic of the Hands-Off Readiness Review (HRR) and **not** of the Launch Readiness Review (LRR)?

A) HRR更严格，验收标准更高。
HRR is far more stringent and has higher acceptance standards.
B) HRR由产品团队自行汇报。
HRR is self-reported by the product teams.
C) HRR需要在新服务对外发布前签字。
HRR is signed off before any new service is made publicly available.
D) HRR需要在新服务接收到真实生产流量前签字。
HRR is signed off before any new service receives live production traffic.

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在交互、用户体验（UX）设计领域，最强大的方法之一是情景调查。

哪一项是对情景调查的**最佳**描述?

One of the most powerful techniques in interaction and user experience (UX) design is contextual inquiry.

What is the **best** description of contextual inquiry?

A) 产品团队要求用户对团队对应用程序演示作出响应。
The product team asks users to respond to an application demonstration by the product team.
B) 产品团队向用户询问，应用程序在家中的使用情况。
The product team interviews users on the use of the application at home.
C) 产品团队观察用户在用户的日常使用状态下，使用此应用的行为。
The product team observes users who use the application in their natural environment.
D) 在用户验收测试期间，产品团队在配备测试设备的专用房间内研究用户行为。
The product team studies users during the user acceptance test in a special room with test equipment.

23 / 40
初创公司ABC在根据用户期望开发移动导航应用程序的特性上面临严峻挑战。

哪一项是确保UX移动导航应用程序的特性与用户期望相符的**最佳**方法?

Startup company ABC is having serious challenges in developing features for a mobile navigation application that meet the expectations of the user.

What is the **best** approach to make sure features are directly aligned with the expectations of the user regarding the UX mobile navigation application?

A) 更充分地开发UX移动导航应用程序，使客户在 UX导航中拥有更多高级功能与选择，为客户提供更多自定义 UX 的选项。
Develop the UX mobile navigation application more fully so consumers have more advanced features and choices to navigate in the UX, providing the consumers more options to customize the UX.
B) 开发两个版本的UX移动导航应用程序，客户将随机获得主控版本与升级版本的任意一个。
Develop the UX mobile navigation application where consumers are randomly selected to be shown one of two versions of a UX they can choose from, either a control or a treatment.
C) 修改移动导航应用程序当前的UX特性，以便ABC在不牺牲质量的前提下保留UX的核心功能。
Make corrections to the current UX features for the mobile navigation application so that ABC sticks to the core functionality of the UX without sacrificing quality.
D) 提前三周发布移动导航应用程序的一个新特性，从而收集客户对此特性的反馈。
Release one feature for the mobile navigation application to get feedback from the consumer on the current feature over a period of three weeks.

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开发团队可通过下列哪种方法促进交付预期的业务成果?

What approach can be used by a Development team to aid in the delivery of expected business outcomes?

A) 认真开展大量实验
Careful execution of numerous experiments
B) 完整的回归测试
Full regression testing
C) 假设驱动开发
Hypothesis-driven development
D) SDLC
SDLC

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ABC公司在系统"工资单应用程序"上，遇到了代码变更的问题。目前，已经执行的代码变更未能有完善的记录。例如，最新的代码修复记录如下："修复#1801工资单应用程序问题"。公司注意到这是描述不当的"拉动"记录请求。

恰当的"拉动"请求包括以下内容:
- 为什么要进行修复?
- 应该如何进行修复?

恰当的"拉动"请求还必须包含什么内容?

Company ABC has had challenges in understanding the impact of code changes to their payroll application. Currently, the implemented code changes are poorly documented. The last code fix for example, was documented as follows: "Fix issue #1801 for payroll application". The company notices that this is a bad pull request.

A good pull request includes the following:

- Why are we implementing the fix?
- How will the fix be implemented?

What else should be included in a good pull request?

A) 受到修复影响的业务部门
The business units impacted by the fix
B) 执行修复的潜在风险以及对策
The potential risks and countermeasures of implementing the fix
C) 执行修复的支持发布计划表
The supporting release schedule for implementing the fix

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在开发人员查看代码的同时，同事提供反馈。

此处描述的是哪一种评审方法?

The developer walks through the code while a colleague gives feedback.

Which review technique is described here?

A) 观察者评审
Over-the-shoulder
B) 结对编程
Pair programming
C) 同行评审
Peer review
D) 工具辅助评审
Tool-assisted review

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哪种评审实践会直接减少编码错误?

Which review practice results directly in a decrease in coding errors?

A) 观察者评审
Over-the-shoulder review
B) 结对编程
Pair programming
C) 同行评审
Peer review
D) 工具辅助评审
Tool-assisted review

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云服务提供商希望通过使用猿猴军团（可靠性监控服务）提高服务容量。

这种情况需要使用哪种猴子?

A cloud service provider wants to increase the capacity of their service by using a Simian Army Monkey.

Which monkey is needed in this case?

A) 医生猴子
Doctor monkey
B) 看门猴子
Janitor monkey
C) 延迟猴子
Latency monkey

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ABC公司采用DevOps工作法，希望推广开放、免责的学习环境。近期，ABC公司经历了一次重大的应用程序故障，但随后恢复了应用程序服务。

通常哪一项是免责事后分析会议上必须完成的**第一**要务？

Company ABC is adopting the DevOps way of working and wants to promote a learning environment that is open and blameless. ABC recently experienced a major application failure and was able to restore the application service.

What is usually the **first** task that must be completed during the blameless postmortem meeting?

A) 为重大的应用程序故障期间发生的相关事件建立时间表
Construct a timeline of relevant events as they occurred during the major application failure
B) 确定对策，防止未来再次发生重大的应用程序故障
Identify countermeasures to prevent the major application failure from reoccurring in the future
C) 确定重大的应用程序故障的根本原因，提出纠正措施，防止未来再次发生
Identify the root cause of the failure to propose a corrective action and prevent reoccurrence
D) 所有人都能在集中位置获取公布的事后分析，并学习该事后分析
Publish the postmortem to a centralized location where everyone can access it and learn from it

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通过注入生产故障来产生恢复能力的实践会要求什么？

What is required when creating resilience by injecting production failures?

A) 定义故障模式
Defining the failure mode
B) 组织事后回顾会议
Organizing postmortem meetings
C) 培训人员
Training the people
D) 使用测试环境
Using a test environment

31 / 40
哪一项是执行演练日（game day）计划的**第一个**步骤?

What is the **first** step of a plan for performing a game day?

A) 定义和执行演习
Define and execute drills
B) 识别并解决问题，接着测试
Identify and address problems, and test
C) 计划断电
Plan the outage
D) 准备和消除单点故障
Prepare and eliminate SPOFs

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哪一项属于非功能需求（NFR）?

What is an example of a non-functional requirement?

A) 在不同的版本间兼具向前和向后的兼容性
Have forward and backward compatibility between versions
B) 可以生成被推迟的工作进度的报表
Make it possible to report on delayed schedules
C) 为酒店预订系统登记财务交易
Register financial transactions for a hotel booking system

33 / 40
为了成功创建可重复使用的运维用户故事，应执行哪项操作?

Which activity should be performed for the successful creation of reusable Operations user stories?

A) 将运维用户故事与相关的研发功能提升和缺陷关联起来
Associate Operations user stories to the relevant development enhancements and defects
B) 定义交接流程中的操作，接着使用适当工具和辅助性的工作流将这些操作自动化
Define activities within the handoff process and then automate these activities using the appropriate tools and supporting workflows
C) 确认所有必要的运维操作和须完成操作的人员
Identify all required operational work activities and actors needed to complete them

34 / 40
请考虑以下要素：

1. 变更请求
2. 部署流水线工具
3. 编译后的可执行文件
4. 操作指南和标准

其中哪两个要素一般存储在统一的共享源代码存储库里?

Please consider the following elements:
1. Change requests
2. Deployment pipeline tools
3. Compiled program executables
4.Tutorials and standards

Which two elements are typically stored in a single shared source code repository?

A) 1和2
1 and 2
B) 1和4
1 and 4
C) 2和3
2 and 3
D) 2和4
2 and 4

35 / 40
将局部发现转化成全局改进成果的目标是什么?

What is the goal of converting local discoveries into global improvements?

A) 提升实践的状态，不只是Dev和Ops实践，还包含整个组织各个方面的实践。
To elevate the state of the practice of not just Dev and Ops, but also the entire organization.
B) 使所有新服务和现有服务都能够更加方便地利用到集体知识。
To make it easier for all new and existing services to leverage the collective knowledge.
C) 创造协作性更好的企业文化以及更安全、更具弹性的系统。
To make the work culture more collaborative and to make the systems safer and more resilient.
D) 强化让每个人都感受到舒适、可靠的文化。
To reinforce a culture where everyone feels comfortable and responsible.

36 / 40
开发人员可以为任何工程师提供便利，便于他们在应用程序和环境中准确地生成并使用日志记录和加密标准。

哪一个**不**是通过共享的源代码存储库提供支持的?

Developers can make it easy for any engineer to correctly create and use logging and encryption standards in their applications and environments.

Which is **not** a shared source code repository item that supports this?

A) 代码库及其推荐的配置
Code libraries and their recommended configurations
B) 部署包
Deployment packages
C) 操作系统（OS）包和应用的构建
Operating system (OS) packages and builds
D) 加密管理工具
Secret management tools

37 / 40
开发人员编写了新的代码时，始终伴随着非授权访问的风险。

哪一种控制措施**不**能规避此风险?

When developers are introducing code, there is always the risk of enabling unauthorized access.

Which control does **not** mitigate that risk?

A) 代码评审
Code reviews
B) 代码测试
Code testing
C) 有效地打补丁
Effective patching
D) 渗透测试
Penetration testing

38 / 40
下列哪种情况属于应用程序的遥测?

What is an example of creating telemetry in an application?

A) 操作系统(OS)的变更
Operating system (OS) changes
B) 每日评审系统日志
Review of system logs on a daily basis
C) 安全组的变更
Security group changes
D) 用户密码的重置
User password resets

39 / 40
哪个流程支持合规性要求，同时也是降低运维和安全风险的主要控制措施?

Which process serves as a primary control to reduce Operations and security risks and also supports compliance requirements?

A) 变更管理流程
Change management process
B) 配置管理流程
Configuration management process
C) 发布和部署管理流程
Release and deployment management process
D) 服务级别管理流程
Service level management process

40 / 40
哪一项属于采用职责分离控制措施的缺点?

What is a drawback when adopting the separation of duty control?

A) 职责分离控制措施通常会减少工程师收到的关于其工作的反馈，并使接收反馈的速度变慢，阻碍了开发工作。
The separation of duty control can often impede development efforts by slowing down and reducing the feedback that engineers receive on their work.
B) 职责分离控制措施要求开发人员向代码管理员提交变更内容，由代码管理员评审、审批变更，接着再应用到生产。
The separation of duty control requires the Developer to submit changes to a code librarian, who would review and approve the change before it is promoted to production.
C) 职责分离控制措施要求检查每一次代码提交，并进行代码评审，从而为工作质量提供必要保证。但职责分离控制措施会产生不必要的工作。
The separation of duty control results in unnecessary work since it requires inspection of code check-ins, and code reviews, providing the necessary reassurance about the quality of our work.

答案解析

1 / 40
敏捷宣言的原则是什么?

What is a principle of the Agile Manifesto?

A) 创建持续和动态学习的文化。
To create a culture of continual and dynamic learning.
B) 在工作系统中生成反馈和前馈回路。
To create feedback and feedforward loops into our system of work.
C) 高频次交付可工作的软件，间隔从几星期到两三个月。
To deliver working software frequently, from a couple of weeks to a couple of months.
D) 使工作可见，缩小批次尺寸并缩短工作间隔，构建质量，从而增强流动。
To increase flow by making work visible, by reducing batch sizes and intervals of work, and by building quality.

A) 错误。这属于持续学习和实验的原则。
Incorrect. This belongs to the principle of continuous learning and experimentation.
B) 错误。这属于反馈原则。
Incorrect. This belongs to the principle of feedback.
C) 正确。这是敏捷宣言的主要原则之一。其他原则对于自我激励的小型团队及在高度信任的管理模式下工作必不可少。（文献：A，第1部分简介）
Correct. This is one of the key principles of the Agile Manifesto. Other principles are the need for small, self-motivated teams, and working in a high-trust management model. (Literature: A, Introduction of Part 1)
D) 错误。这属于流原则。
Incorrect. This belongs to the principle of flow.

2 / 40
“将日常工作的改进制度化”属于三步工作法中的哪一步?

To which of the Three Ways does "institutionalizing the improvement of daily work" belong?

A) 持续学习和实验
Continuous learning and experimentation
B) 反馈
Feedback
C) 流
Flow

A) 正确。三步工作法的原则要求将日常工作的改进制度化，将局部学习转换为可供整个组织使用的整体学习，并在日常工作中持续注入压力。（文献：A，第4章）
Correct. The principle of the Third Way requires institutionalizing the improvement of daily work, converting local learnings into global learnings that can be used by the entire organization, as well as continually injecting tension into our daily work. (Literature: A, Chapter 4)
B) 错误。“将日常工作的改进制度化”属于持续学习和实验原则。
Incorrect. 'Institutionalizing the improvement of daily work' is a Continuous learning and experimentation principle.
C) 错误。“将日常工作的改进制度化”属于持续学习和实验原则。
Incorrect. 'Institutionalizing the improvement of daily work' is a Continuous learning and experimentation principle.

3 / 40
交互系统(SoE) 和记录系统(SoR) 在变更速度上有何区别?

What is the difference between a System of Engagement (SoE) and a System of Records (SoR) in terms of pace of change?

A) 一般而言，SoE和SoR的变更速度同步。
SoE and SoR typically have the same pace of change.
B) 一般而言，SoE的变更速度显著高于SoR。
SoE typically has a much higher pace of change than SoR.
C) 一般而言，SoE的变更速度显著低于SoR。
SoE typically has a much lower pace of change than SoR.
D) SoE和SoR间变更速度的关系取决于不同的信息系统。
This relationship differs per information system.

A) 错误。一般而言，SoE的变更速度显著高于SoR。
Incorrect. SoE typically has a much higher pace of change than SoR.
B) 正确。SoE代表用户界面。因此，SoE的变更速度更快。此外，SoR的变更较为复杂。（文献：A，第5章）
Correct. The pace of change for SoE is higher since it represents the user interface. Additionally, SoR is more complex to change. (Literature: A, Chapter 5)
C) 错误。一般而言，SoE的变更速度显著高于SoR。
Incorrect. SoE typically has a much higher pace of change than SoR.
D) 错误。可以给出一个通用说法：一般而言，SoE的变更速度显著高于SoR。
Incorrect. A common statement can be given. SoE typically has a much higher pace of change than SoR.

4 / 40
让开发和运维使用共享工具的益处是什么?

What is a benefit of having Development and Operations using a shared tool?

A) 生成统一的待办事项列表，便于每个人从全局角度优先考虑改进项目。
A unified backlog, where everyone prioritizes improvement projects from a global perspective.
B) 开发人员能够得到关于应用程序在生产环境中运行表现的反馈，其中包括生产中断时的修复。
Developers get feedback on how their applications perform in production, which includes fixing it when it breaks.
C) 使团队能够在正常的营业时间内进行部署并进行简单的转换。
Enabling the team to perform deployments during normal business hours and conducting simple changeovers.
D) 将运维的知识转换为自动化代码，这样更加可靠，并且可以被广泛地重复使用。
Transforming Operations knowledge into automated code that can be far more reliable and widely reused.

A) 正确。通过统一的待办事项列表，每个人能够从全局角度优先考虑改进项目，选择对于组织具有最高价值的工作或对降低技术债务的影响最大的工作。（文献：A，第6章）
Correct. With a unified backlog everyone prioritizes improvement projects from a global perspective, selecting work that has the highest value to the organization or has the most impact on reducing the technical debt. (Literature: A, Chapter 6)
B) 错误。这是开发与运维轮值值守的益处。
Incorrect. This is a benefit that Development shares when doing pager rotation duties with Operations.
C) 错误。益处是自动化和实现低风险发布。
Incorrect. This is a benefit of automating and enabling low-risk releases.
D) 错误。益处是在服务团队中嵌入运维工程师。
Incorrect. This is a benefit of embedding Operations engineers into our service teams.

5 / 40
将运维能力更好地赋能给开发团队，可以产生更多以市场为导向的成果，提高效率和生产力。

哪一项是实现这一点**最**有效的方法?

More market-oriented outcomes can be created by better integrating Operations capabilities into Development teams, making both more efficient and productive.

Which approach would **best** accomplish this?

A) 为运维团队派遣一名开发联络员
Assign a Development liaison to the Operations team
B) 创建基础架构自服务
Create infrastructure self-services
C) 将运维团队外包
Outsource the Operations team
D) 培训开发人员，使其能够开展运维工作
Train Developers to do the work of Operations

A) 错误。应采用其他方式："为开发团队派遣一名运维联络员。"
Incorrect. It should be the other way around: "Assign an Operations liaison to the Development team".
B) 正确。这是将运维与开发相结合的三种综合策略中的一种：
1) 构建自服务能力，从而让服务团队中的开发人员具备高生产力。
2) 在服务团队中安排运维工程师。
3) 如果无法安排运维工程师，为服务团队派遣运维联络员。（文献：A，第8章）
Correct. This is one of the three broad strategies for integrating Operations into Development:
1) Create self-service capabilities to enable Developers in the service teams to be productive.
2) Embed Operations engineers into the service teams.
3) Assign Operations liaisons to the service teams when embedding Operations is not possible. (Literature: A, Chapter 8)
C) 错误。不建议将外包作为策略。外包商的员工与开发团队的距离甚至更远。
Incorrect. Outsourcing is not advised as a strategy. The employees of the outsourcer will be even further away from the Development team.
D) 错误。开发人员可以使用基础设施即代码。但这不会使运维的职能遭到淘汰。
Incorrect. Developers can use infrastructure as code. However, this will not make the function of Operations obsolete.

6 / 40
由于运维工程师延误了新环境的生成，银行需要更长的时间将新的或发生变化的产品投入市场。

哪一项是关于自动生成环境的正确说法?

A bank needs longer timescales to bring new or changed offerings to market, due to delays in the creation of new environments by Operations engineers.

What is true about the automatic creation of environments?

A) 自动生成的环境可用于所有环境。
Automatically created environments can be used for all environments.
B) 由于安全限制，自动生成的环境可用于生产环境以外的所有环境。
Automatically created environments can be used for all environments except the production environment due to security restrictions.
C) 基于四眼原则，在生产中使用自动生成的环境时，DevOps要求运维人员评审。
DevOps requires a review by Operations when automatically creating environments in production due to the four eyes principle.
D) 基于四眼原则，在生产中使用自动生成的环境时，DevOps要求运维人员的手动同意。
DevOps requires the manual agreement of Operations when automatically creating environments in production due to the four eyes principle.

A) 正确。持续部署不需要使用脚本进行手动操作。这类脚本应自动化。这适用于所有环境。（文献：A，第9章）
Correct. Continuous deployment requires no manual actions to be performed by using scripts. These scripts should be automated. This is valid for all environments. (Literature: A, Chapter 9)
B) 错误。生产环境的生成和维护应充分自动化。
Incorrect. The production environment should be created and maintained completely automatically.
C) 错误。无需评审自动化脚本。自动化流程受监控。
Incorrect. There is no need to review automated scripts. Automated processes are monitored anyway.
D) 错误。无需四眼原则指南。原因在于脚本验收和脚本部署工具都受变更控制。
Incorrect. There is no need for a manual four eyes principle, since the acceptance of the scripts and the deployment tool of the scripts are under change control.

7 / 40
价值流图过程块应包含哪种价值?

Which value should be included in a value map process block?

A) 应用程序遥测
Application telemetry
B) 完整和准确的百分比
Percent complete and accurate
C) 团队速率
Team velocity
D) 在制品（WIP）
Work in progress (WIP)

A) 错误。应用程序遥测用于监控运行中的应用程序的行为，从而报告程序的健康状况，提供准确、快速反馈并发现错误。
Incorrect. Application telemetry is used to monitor application behavior while it is running in order to report its health status, providing fast and accurate feedback and detection of errors.
B) 正确。应包含在价值流图过程块内。原因在于这是了解价值流根据业务要求交付的质量的关键指标之一。（文献：A，第6章）
Correct. This should be included in a value map process block as it is part of the key indicators to understand the quality delivered by that value stream as required by the business. (Literature: A, Chapter 6)
C) 错误。团队速率是在冲刺中衡量，在冲刺会议上使用，用于评估冲刺阶段可完成的工作量。
Incorrect. Team velocity is a value that is measured during a sprint and used during a sprint meeting to estimate the amount of work that can be done during the sprint.
D) 错误。WIP是应包含在或源自于看板的概念，不属于价值流图的组成部分，也不会为价值流分析提供任何价值。
Incorrect. WIP is a concept that should be included or derived from a kanban board and it is not part of the value stream map, nor does it provide any value for the value stream analysis.

8 / 40
为了尽量降低DevOps中的业务风险，哪一项是版本控制的**主要**目标?

In order to minimize risks to the business within DevOps, what is a **main** goal of version control?

A) 配置偏离理想状态时，保证警报功能
Ensure the ability to alert when configuration changes from the desired state
B) 保证重新生成先前的最佳环境状态的功能
Ensure the ability to recreate the previous state of the test environment
C) 保证重新生成生产环境以及构建流程的功能
Ensure the ability to recreate the production environment and build processes
D) 保证不同的开发团队共享源代码的功能
Ensure the ability to share the source code between different Developer teams

A) 错误。尽管版本控制非常关键，便于其他工具使用相关信息发现配置偏离理想状态，但这不是版本控制的目标，也不是此处的最佳答案。这是因为版本控制应允许以更快的速度重新生成环境，保持服务和流的质量。
Incorrect. Even though version control is key so other tools use its information to detect configuration drifts from desired state, this is not the goal of version control itself, nor the best answer here, as version control should allow faster recreation of environments to maintain quality of service and flow.
B) 错误。这是版本控制的益处，但不是在DevOps内的主要目标。此外，测试环境通常针对各次测试重新构建，重新生成先前的状态不太有用。
Incorrect. This could be a benefit of version control but is not the main goal of it within DevOps. Also, the test environment is usually rebuilt for each test and recreating it to a previous state is not very useful.
C) 正确。DevOps内的版本控制应允许重新生成生产环境以及构建流程。采用此方法的组织比其他组织表现得更加出色。（文献：A，第9章）
Correct. Version control within DevOps should allow to re-create production environments as well as build processes. Organizations that adopt this approach perform better than the ones that do not. (Literature: A, Chapter 9)
D) 错误。这是版本控制的目的，但前提是仅以开发为重点。这不是在DevOps内的目标。原因在于DevOps内的版本控制要求所有区域将制品、工具和流程存储其中，以实现性能、流、团队沟通及在所有环境下减少浪费的预见性。
Incorrect. This is the purpose of version control when used just with a Development focus, but it is not the goal within DevOps, as version control in DevOps requires that all the areas store their artifacts, tools and processes within it in order to achieve performance, flow, communication between teams and predictability with reduction of waste in all the environments.

9 / 40
所有IT团队成员集结到一起，共同评审应进行的变更，以便进一步实施DevOps。团队成员需要就与DevOps原则相符的完成的定义（DoD） 达成一致。

哪一项完成的定义（DoD）适用于DevOps?

An IT team gets together to review some changes that should be made in order to further adopt DevOps. They must agree on a definition of done (DoD) that is aligned with the DevOps principles.

Which DoD is a proper fit for DevOps?

A) 代码已并入主分支，并通过了自动化单元测试。
The code has been integrated into the main branch and passed automated unit testing.
B) 代码在开发人员的电脑中如期运行，已通过自动化单元测试。
The code is running as expected on the Developer's laptop and passed automated unit testing.
C) 代码在类似生产的环境中运行，已通过用户验收测试。
The code is running in a production-like environment and passed user acceptance testing (UAT).

A) 错误。从开发人员角度，这是标准的DoD，但未能实现DevOps目标，即交付业务价值。因此，DoD应包含将工作代码传输至类似生产的环境，而不是并入主分支。
Incorrect. This is the standard DoD from a Developer's perspective and does not achieve the goal of DevOps which is to deliver value to the business, so the DoD should include shipping working code to a production-like environment, not integration into the main branch.
B) 错误。所有工作都在开发人员的电脑中执行这一情况并不能保证其会在类似生产的环境中运行。
Incorrect. The fact that everything works on the Developer's laptop does not provide any warranties it will work in the production-like environment.
C) 正确。保证代码如期运行，并且可传输。（文献：A，第9章）
Correct. This assures the code is working as expected and is potentially shippable. (Literature: A, Chapter 9)

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哪一项是实现环境搭建和环境配置自动化的最有效工具?

Which tooling can **best** be used to automate the building and configuration of environments?

A) 提供开发、测试或验收环境的工单系统
A ticketing system for the provision of a development, test, or acceptance environment
B) 将生产环境设置复制到开发、测试和验收环境的工具
A tool that copies the production environment settings to the development, test, and acceptance environments
C) （为保持环境同步）各环境下手动分发和维护的配置文件
Configuration files per environment that are manually distributed and maintained in order to keep the environments in sync
D) 便于程序员自行变更环境的基础设施即代码配置管理工具
Infrastructure as code configuration management tools that enable the programmers in changing the environments themselves

A) 错误。提供环境的工单系统会阻碍部署流水线中的流，增加了交接次数，因而造成浪费。应通过工具的使用实现环境的自动提供。
Incorrect. A ticketing system for the provision of environments will impede flow in the deployment pipeline, generate more hands-off and therefore is a waste. Tools should be used to automate the provision of environments.
B) 错误。在DevOps内，不建议采用这种工作法。环境必须从头开始构建。此外，不允许将生产数据用于D-T-A环境。
Incorrect. Within DevOps this is not the proposed way of working. An environment must be built from scratch. Also, production data is not allowed to be used in the D-T-A environments.
C) 错误。环境的配置文件必须自动分发。
Incorrect. Configuration files for environments must be automatically distributed.
D) 正确。这是环境构建和配置自动化的选项之一。开发人员可将基础设施即代码用于自行构建和配置环境。（文献：A，第9章）
Correct. This is one of the options to automate the building and configuration of the environment. Infrastructure as code can be used by the Developers to build and configure the environments themselves. (Literature: A, Chapter 9)

11 / 40
自动化测试套件的特定设计目标是尽可能早地在测试中找到错误。理想自动化测试金字塔模型显示了须执行测试的正确顺序。

需**首先**执行哪一个测试?

A specific design goal of an automated test suite is to find errors as early in the testing as possible. The ideal testing automation pyramid shows the correct order in which the test must be performed.

Which test must be performed **first**?

A) 自动化API测试
Automated API test
B) 自动化组件测试
Automated component test
C) 自动化集成测试
Automated integration test
D) 自动化单元测试
Automated unit test

A) 错误。必须首先执行自动化单元测试。在五个测试中，这个测试排序第四。
Incorrect. The automated unit test must be performed first. This test is 4th in a sequence of 5.
B) 错误。必须首先执行自动化单元测试。在五个测试中，这个测试排序第二。
Incorrect. The automated unit test must be performed first. This test is 2nd in a sequence of 5.
C) 错误。必须首先执行自动化单元测试。在五个测试中，这个测试排序第三。
Incorrect. The automated unit test must be performed first. This test is 3rd in a sequence of 5.
D) 正确。这个测试排序第一。（文献：A，第10章）
Correct. This is the 1st test to be performed. (Literature: A, Chapter 10)

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DevOps团队希望通过测试驱动开发来提高速率。

哪一项是正确的操作顺序?

A DevOps team wants to increase velocity by using test-driven development.

Which order of actions is correct?

A) 1. 重构
2. 书写测试用例
3. 书写功能代码
1. Refactor
2. Write a test case
3. Write the functional code

B) 1. 书写功能代码
2. 书写测试用例
3. 重构
1. Write the functional code
2. Write a test case
3. Refactor

C) 1. 书写测试用例
2. 书写功能代码
3. 重构
1. Write a test case
2. Write the functional code
3. Refactor

A) 错误。首先进行测试，接着编码。第三步是重构。
Incorrect. First perform the testing, then the coding. Refactoring follows as the third step.

B) 错误。首先进行测试，接着编码。第三步是重构。
Incorrect. First perform the testing, then the coding. Refactoring follows as the third step.

C) 正确。首先进行测试，接着编码。第三步是重构。（文献：A，第10章）
Correct. First perform the testing, then the coding. Refactoring follows as the third step. (Literature: A, Chapter 10)

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一家保险公司聘请DevOps专家为其DevOps团队的分支策略选择提供建议。DevOps专家评估了两种策略：

1. 优化个人生产力
2. 优化团队生产力

关于这两种策略，哪一种说法是正确的?

An insurance company hires a DevOps professional to advise the DevOps team in choosing a branching strategy. The DevOps professional evaluates two strategies:

1. Optimize for individual productivity
2. Optimize for team productivity

Which statement about these two strategies is true?

A) 两种策略产生的合并工作量是相等的。
Both strategies result in an equal amount of merging effort.
B) 策略1产生的合并工作量高于策略2。
Strategy 1 results in far more merging effort than 2.
C) 策略2产生的合并工作量高于策略1。
Strategy 2 results in far more merging effort than 1.

A) 错误。策略1导致一人一分支。因此，合并会变为一场噩梦。无论使用哪个版本的管理系统，策略2都更加适合。
Incorrect. Since strategy 1 results in a branch per person, merging becomes a nightmare. Regardless of which version management system is used, strategy 2 is much better.
B) 正确。个人生产力优先意味着每个DevOps开发人员一个独立分支，无需合并即可独立生产软件。而策略2实际上没有真正的分支，开发是在连续不断的主线上进行。（文献：A，第11章）
Correct. Individual productivity means a branch per DevOps Developer by which he/she can produce software individually without integrating. Strategy 2 is about having no branch(es) at all, so development takes place in an unbroken line. (Literature: A, Chapter 11)
C) 错误。策略2的合并工作量更低。这是因为每个人都在共同区域内工作。
Incorrect. Strategy 2 results in less merging effort because everyone works in a common area.

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一家零售公司彻底从瀑布式开发流程转向DevOps。短时间内作出了很多选择。这就产生了技术债务。例如，产品上市时间（time to market）显著增加。但也有消除诸多延误的方法。

价值流图显示20%的冲刺时间都花在移植代码上，所有代码均在单独的代码分支上实现维护。

哪种技术债务解决方案会实现更快的流动（faster flow）？

A retail company has radically changed the development process from waterfall to DevOps. Many choices have to be made in a short period of time. This is causing some technical debt. The time to market, for example, has increased dramatically. There are, however, ways to eliminate a lot of the delays.

Value stream mapping shows that 20% of the sprint time is spent on porting code, all maintained on separate code branches.

Which solution for this technical debt will result in a faster flow?

A) 采用基于主干的开发
Adopt trunk-based development
B) 在开发人员工作站复制测试故障
Reproduce test failures on Developer workstations
C) 开始金丝雀发布
Start doing canary releases
D) 使用更多遥测
Use more telemetry

A) 正确。基于主干的开发意味着不允许存在分支。因此，不再需要合并。（文献：A，第11章）
Correct. Trunk-based development means no branching is allowed and, therefore, the merging is eliminated. (Literature: A, Chapter 11)
B) 错误。问题是在分支造成合并过程中的问题。测试无法解决延迟问题。
Incorrect. The problem is the branching which causes problems while merging. Testing does not solve the delay.
C) 错误。金丝雀发布本会对持续部署产生积极影响，但测试无法解决延迟问题。
Incorrect. Testing does not solve the delay, even when canary releases would have a positive impact on the continuous deployment perspective.
D) 错误。遥测无法解决合并问题。
Incorrect. Telemetry does not solve the merging problem.

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实现高生产力、可测试性和安全的架构的特征是什么?

Which is a characteristic of an architecture that enables productivity, testability and safety?

A) 定义含糊的接口
Loosely-defined interfaces
B) 紧耦合
Tightly-coupled
C) 定义明确的API
Well-defined APIs

A) 错误。定义明确的接口是实现高生产力、可测试性和安全的架构的特征，通过强制说明各个模块如何连通而实现。定义含糊的界面则相反。
Incorrect. Well-defined interfaces are a characteristic of an architecture that enables productivity, testability and safety, by enforcing how modules connect with each other. Loosely-defined interfaces are not.
B) 错误。紧耦合架构为单体应用或包含连接非常紧密的模块。每一次尝试提交代码至主干时，都存在发生全局故障的风险。每一次小变更都需要数日大量沟通、协调以及可能被影响的团队的批准。
Incorrect. A tightly-coupled architecture is monolithic or has modules that are too interconnected. Every time we attempt to commit code into trunk we risk creating global failures, each small change requires enormous amounts of communication and coordination over days, as well as approvals from any group that could potentially be affected.
C) 正确。定义明确的应用程序接口(API)使得高生产力、更容易的服务测试和安全的架构成为可能。（文献：A第13章）
Correct. Well-defined Application Programming Interfaces (APIs) allows an architecture that provides productivity, easier testing of services and safety. (Literature: A, Chapter 13)

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解决DevOps问题的**最佳的**遥测方法是什么?

What is the **best** telemetry approach to solve problems within DevOps?

A) 投资遥测工具非常重要，重点应为生产环境、部署流水线和预生产环境。
Investing in telemetry tooling is important, and it should focus on the production environment, deployment pipeline and pre-production.
B) 投资遥测工具非常重要，仅需重视生产环境。
Investing in telemetry tooling is important, and it should focus on the production environment only.
C) 投资遥测工具不重要。重点是重启成本更低的冗余服务。
Investing in telemetry tooling is not important, the focus should be on rebooting redundant services which is much cheaper.
D) 投资遥测工具不重要。重点是应用程序用户。原因在于用户提供更全面、成本更低的监控。
Investing in telemetry tooling is not important, the focus should be on the user of the application who is a much more complete and cheaper monitor provision.

A) 正确。问题不仅出现在生产环境，也会出现在别处。DevOps要求快速反馈。反馈在流水线起点开始。（文献：A第14章）
Correct. Problems do not only occur in the production environment, but also elsewhere. DevOps requires fast feedback. The feedback starts at the beginning of the pipeline. (Literature: A, Chapter 14)
B) 错误。仅重视生产环境是不够的。部署流水线和预生产环境对于尽快发现问题也很重要。
Incorrect. Focusing on the production environment alone is not enough. The deployment pipeline and pre-production are important too to spot errors early.
C) 错误。重启的成本并不低。大量生产时间都浪费在寻找错误上。
Incorrect. Rebooting is not cheaper. A lot of production time is wasted to find the error.
D) 错误。如果用户是服务的唯一监控人，那么将损失大量生产时间。这是因为监控能够更快地发现问题所在及出现问题的位置（在正确实施的情况下），而且并不是所有问题都是用户发现的。仅仅是用户可看到的错误被发现，而非那些发生在隐蔽位置的错误。
Incorrect. If the user is the sole monitor of the service then the loss of production time is high since the monitor provision is much faster in detecting where and what goes wrong (if well implemented) and not all errors are found by the user. Only errors that the user can see are found, not the ones that are happening in the background.

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在监控框架内，应从三个层次收集数据。

哪一项**不**属于这三层?

Within the monitoring framework, data should be collected from three layers.

Which is **not** one of those three layers?

A) 应用程序
Application
B) 业务逻辑
Business logic
C) 业务指标
Business metrics
D) 运维系统
Operating system

A) 错误。应用程序是三层中的一层，数据收集应在监控框架内完成。
Incorrect. Application is one of the three layers where data collection should be done in the monitoring framework.
B) 错误。业务逻辑是三层中的一层，数据收集应在监控框架内完成。
Incorrect. Business logic is one of the three layers where data collection should be done in the monitoring framework.
C) 正确。业务指标不属于三层中的组成部分，数据收集应在监控框架内完成。业务指标是监控的结果。（文献：A，第14章）
Correct. Business metrics is not one of the three layers where data collection should be done in the monitoring framework. Business metrics is rather the result of the monitoring. (Literature: A, Chapter 14)
D) 错误。运维系统是三层中的一层，数据收集应在监控框架内完成。
Incorrect. Operating system is one of the three layers where data collection should be done in the monitoring framework.

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自助遥测帮助哪一种人员实现增值?

For which audience does self-service access telemetry add value?

A) 仅开发人员
Developers only
B) 仅开发人员和运维人员
Developers and operators only
C) 仅开发人员、运维人员和利益干系人
Developers, operators, and stakeholders only
D) 开发人员、运维人员、利益干系人以及客户
Developers, operators, stakeholders, and customers

A) 错误。也为用户、利益干系人和运维人员增加价值。
Incorrect. It also adds value for customers, stakeholders, and operators.
B) 错误。也为用户和利益干系人增加价值。
Incorrect. It also adds value for customer and stakeholders.
C) 错误。也为用户增加价值。
Incorrect. It also adds value for customers.
D) 正确。自助使用遥测为所有访客增加价值。（文献：A，第14章）
Correct. Self-service access to telemetry adds value for all visitors. (Literature: A, Chapter 14)

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在兼具自动化测试、快速部署流程和充分遥测的环境下，哪一种方法为业务提供**最多**DevOps方向的益处?

In an environment that has automated testing, fast deployment processes and sufficient telemetry, which technique offers **most** DevOps benefits to the business?

A) 前滚
Fix forward
B) 回滚
Roll back
C) 移除有故障的服务器
Take broken servers out
D) 关闭故障特性
Turn off broken features

A) 正确。尽管存在风险，在兼具自动化测试、快速部署流程和充分遥测的环境下，这个选择非常安全。这样有助于快速确认生产中的每一个环节是否正确运行并为业务增加新的功能和价值。附加值是错误得以纠正，而不是移除新功能特性或有故障的服务器。（文献：A，第16章）
Correct. Even though this could be a risky choice, it is perfectly safe in this environment that has automated testing, fast deployment processes and sufficient telemetry. These will allow to quickly confirm whether everything is functioning correctly into production and deliver new functionalities and value to the business. The added value is that the errors are corrected instead of removing the new feature or take broken servers out. (Literature: A, Chapter 16)
B) 错误。正如"关闭故障特性"，"回滚"的作用是将部署回滚到先前的状态，通过移除引发错误的特性来解决问题。因此，这一做法并没有修复错误，而且也把新增加的价值从生产中去除了。
Incorrect. Just like "turn off broken features", what "roll back" does is roll back the deployment to the previous state, fixing problems by removing the feature that caused the error. Therefore, it does not repair the error and takes new value out of production.
C) 错误。这个选项的聚焦于服务的连续性。但考虑到适当的流程、遥测和测试落实到位，更好的选项是交付新的业务价值。
Incorrect. This option is focused on continuity of the service, but given that we have the proper processes, telemetry and testing in place, the better option is to deliver new business value.
D) 错误。关闭故障特性是风险最低的选项，但这一做法并没有修复错误，而且也把新增加的价值从生产中去除了。
Incorrect. Turn off broken features is the least risky option, but does not correct the error and takes new value out of production.

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某软件公司编写了下列发布指导要求：

- **缺陷计数和严重程度**：应用程序是否按照设计要求运行?
- **监控范围**：发生故障时，监控范围是否足以恢复服务?
- **系统架构**：服务是否紧耦合，足以解决生产中的高事件率?
- **传呼机警报类型/频率**：应用程序是否在生产中没有生成过量警报?

哪一项发布指导要求**不**符合DevOps工作法?

A software company has composed the following launch guidance requirements:

- **Defect counts and severity**: Does the application perform as designed?
- **Monitoring coverage**: Is the coverage of monitoring sufficient to restore service when things go wrong?
- **Systems architecture**: Is the service tightly-coupled enough to solve a high rate of incidents in production?
- **Type/frequency of pager alerts**: Is the application not generating an insupportable number of alerts in production?

Which launch guidance requirement does **not** comply with the DevOps way of working?

A) 缺陷计数和严重程度
Defect counts and severity
B) 监控范围
Monitoring coverage
C) 系统架构
System architecture
D) 传呼机警报类型/频率
Type/frequency of pager alerts

A) 错误。这个要求符合DevOps工作法。
Incorrect. This requirement does comply with the DevOps way of working.
B) 错误。这个要求符合DevOps工作法。
Incorrect. This requirement does comply with the DevOps way of working.
C) 正确。在DevOps工作法内，应采用松耦合架构，而不是紧耦合架构。服务应为松耦合，从而为生产过程中的高速变更和部署提供支持。（文献：A，第16章）
Correct. Within the DevOps way of working, the architecture should be loosely and not tightly coupled. The service should be loosely coupled in order to support a high rate of changes and deployments in production. (Literature: A, Chapter 16)
D) 错误。这个要求符合DevOps工作法。
Incorrect. This requirement does comply with the DevOps way of working.

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哪一项是交接就绪评审（HRR）（而**非**投产就绪评审(LRR)）的独有特点?

Which is a unique characteristic of the Hands-Off Readiness Review (HRR) and **not** of the Launch Readiness Review (LRR)?

A) HRR更严格，验收标准更高。
HRR is far more stringent and has higher acceptance standards.
B) HRR由产品团队自行汇报。
HRR is self-reported by the product teams.
C) HRR需要在新服务对外发布前签字。
HRR is signed off before any new service is made publicly available.
D) HRR需要在新服务接收到真实生产流量前签字。
HRR is signed off before any new service receives live production traffic.

A) 正确。这是HRR的独特之处。原因在于HRR在服务过渡到运维管理状态时需要签署确认验证通过。（文献：A，第16章）
Correct. This is a unique characteristic of HRR, as it is signed off when the service is transitioned to an Operations-managed state. (Literature: A, Chapter 16)
B) 错误。这是LRR（而非HRR）的独有特点。
Incorrect. This is a unique characteristic of LRR and not HRR.
C) 错误。这是LRR（而非HRR）的独有特点。
Incorrect. This is a unique characteristic of LRR and not HRR.
D) 错误。这是LRR（而非HRR）的独有特点。
Incorrect. This is a unique characteristic of LRR and not HRR.

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在交互、用户体验（UX）设计领域，最强大的方法之一是情景调查。

哪一项是对情景调查的**最佳**描述?

One of the most powerful techniques in interaction and user experience (UX) design is contextual inquiry.

What is the **best** description of contextual inquiry?

A) 产品团队要求用户对团队对应用程序演示作出响应。
The product team asks users to respond to an application demonstration by the product team.
B) 产品团队向用户询问，应用程序在家中的使用情况。
The product team interviews users on the use of the application at home.
C) 产品团队观察用户在用户的日常使用状态下，使用此应用的行为。
The product team observes users who use the application in their natural environment.
D) 在用户验收测试期间，产品团队在配备测试设备的专用房间内研究用户行为。
The product team studies users during the user acceptance test in a special room with test equipment.

A) 错误。情景调查是观察用户如何使用应用程序，而不是由供应商演示应用程序。
Incorrect. Contextual inquiry is about observing how the user uses the application and not about a demonstration of the application by the supplier.
B) 错误。情景调查是直接观察用户如何使用应用程序，但不涉及询问应用程序的用途。
Incorrect. Contextual inquiry is about observing directly how the user is using the application and does not involve an interview about the use of the application.
C) 正确。此方法是观察客户如何在自然环境下使用应用程序。（文献：A，第16章）
Correct. This technique is about observing how the customer uses the application in a natural environment. (Literature: A, Chapter 16)
D) 错误。情景调查是观察用户如何在自然环境下（而不是在配备测试设备的专用房间内）使用应用程序。
Incorrect. Contextual inquiry is about observing how the user uses the application in a natural environment, not in a special room with test equipment.

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初创公司ABC在根据用户期望开发移动导航应用程序的特性上面临严峻挑战。

哪一项是确保UX移动导航应用程序的特性与用户期望相符的**最佳**方法?

Startup company ABC is having serious challenges in developing features for a mobile navigation application that meet the expectations of the user.

What is the **best** approach to make sure features are directly aligned with the expectations of the user regarding the UX mobile navigation application?

A) 更充分地开发UX移动导航应用程序，使客户在 UX导航中拥有更多高级功能与选择，为客户提供更多自定义 UX 的选项。
Develop the UX mobile navigation application more fully so consumers have more advanced features and choices to navigate in the UX, providing the consumers more options to customize the UX.

B) 开发两个版本的UX移动导航应用程序，客户将随机获得主控版本与升级版本的任意一个。
Develop the UX mobile navigation application where consumers are randomly selected to be shown one of two versions of a UX they can choose from, either a control or a treatment.

C) 修改移动导航应用程序当前的UX特性，以便ABC在不牺牲质量的前提下保留UX的核心功能。
Make corrections to the current UX features for the mobile navigation application so that ABC sticks to the core functionality of the UX without sacrificing quality.

D) 提前三周发布移动导航应用程序的一个新特性，从而收集客户对此特性的反馈。
Release one feature for the mobile navigation application to get feedback from the consumer on the current feature over a period of three weeks.

A) 错误。特定的特性未能达到预期结果时，新增更多功能或提升特性可能会被其他新的特性取代，确保表现不佳的特性不会实现其预期的业务目标。
Incorrect. When a given feature is not achieving the desired results, adding more functionality or enhancements to the feature may be out-prioritized by other new features, ensuring that the under-performing feature will never achieve its intended business goal.

B) 正确。在现代UX实践中最常用的A/B测试方法。如网站可以随机选择不同客户访问其不同特性的网页，向其展示两种特性页面中的一版，呈现为主控版本（“A”）或升级版本（“B”）的一种。根据对这用户在两类站点后续行为的统计分析，我们论证他们的价值产出是否存在显著差异，从而在升级和结论之间获取论证依据。（文献：A，第17章）
Correct. The most commonly used A/B technique in modern UX practice involves a website where visitors are randomly selected to be shown one of two versions of a page, either a control (the “A”) or a treatment (the “B”). Based on statistical analysis of the subsequent behavior of these two cohorts of users, we demonstrate whether there is a significant difference in the outcomes of the two, establishing a causal link between the treatment and the outcome. (Literature: A, Chapter 17)

C) 错误。特定的特性未能达到预期结果时，修改此特性的优先级并不高，所以我们要确保识别出哪些表现不佳的特性无法实现其预期的业务目标。
Incorrect. When a given feature is not achieving the desired results, making corrections to the feature may be out-prioritized by other new features, ensuring that the under-performing feature will never achieve its intended business goal.

D) 错误。一般而言，每场实验都非常费时，需要数周、甚至数月才能完成。
Incorrect. Each experiment is typically very time intensive per trial and takes weeks or even months to be completed.

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开发团队可通过下列哪种方法促进交付预期的业务成果?

What approach can be used by a Development team to aid in the delivery of expected business outcomes?

A) 认真开展大量实验
Careful execution of numerous experiments
B) 完整的回归测试
Full regression testing
C) 假设驱动开发
Hypothesis-driven development
D) SDLC
SDLC

A) 错误。这种方法不能促进交付预期的业务成果。
Incorrect. This is not an approach to aid in the delivery of expected business outcomes.
B) 错误。这种方法不能促进交付预期的业务成果。
Incorrect. This is not an approach to aid in the delivery of expected business outcomes.
C) 正确。这种方法能够最有效地促进交付的业务成果满足客户预期。（文献：A，第17章）
Correct. This is the best approach to aid in the delivery of expected business outcomes. (Literature: A, Chapter 17)
D) 错误。这种方法不能促进交付预期的业务成果。
Incorrect. This is not an approach to aid in the delivery of expected business outcomes.

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ABC公司在系统"工资单应用程序"上，遇到了代码变更的问题。目前，已经执行的代码变更未能有完善的记录。例如，最新的代码修复记录如下："修复#1801工资单应用程序问题"。公司注意到这是描述不当的"拉动"记录请求。

恰当的"拉动"请求包括以下内容：
- 为什么要进行修复?
- 应该如何进行修复?

恰当的"拉动"请求还必须包含什么内容?

Company ABC has had challenges in understanding the impact of code changes to their payroll application. Currently, the implemented code changes are poorly documented. The last code fix for example, was documented as follows: "Fix issue #1801 for payroll application". The company notices that this is a bad pull request.

A good pull request includes the following:

- Why are we implementing the fix?
- How will the fix be implemented?

What else should be included in a good pull request?

A) 受到修复影响的业务部门
The business units impacted by the fix
B) 执行修复的潜在风险以及对策
The potential risks and countermeasures of implementing the fix
C) 执行修复的支持发布计划表
The supporting release schedule for implementing the fix

A) 错误。修复的潜在风险以及对策必须包含在内。
Incorrect. The potential risks and countermeasures of implementing the fix must be included.
B) 正确。有效的拉动请求需要提供下列详细信息：为什么进行修复；由谁进行修复；执行修复的潜在风险及对策。（文献：A，第18章）
Correct. An effective pull request needs to provide details on why the fix will be implemented, who is implementing the fix, and the potential risks and countermeasures in implementing the fix. (Literature: A, Chapter 18)
C) 错误。执行修复的潜在风险以及对策必须包含在内。
Incorrect. The potential risks and countermeasures of implementing the fix must be included.

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在开发人员查看代码的同时，同事提供反馈。

此处描述的是哪一种评审方法?

The developer walks through the code while a colleague gives feedback.

Which review technique is described here?

A) 观察者评审
Over-the-shoulder
B) 结对编程
Pair programming
C) 同行评审
Peer review
D) 工具辅助评审
Tool-assisted review

A) 正确。观察者评审方法是编写代码后编写者与同事的相互作用。（文献：A，第18章）
Correct. The over-the-shoulder technique is the interaction between the author and a colleague after writing the code. (Literature: A, Chapter 18)
B) 错误。这种评审方法是在编码过程中（而不是编码之后）进行的。
Incorrect. This review technique is performed during the coding and not afterwards.
C) 错误。这种方法在编码之后进行，但编写者无需在场。
Incorrect. This is performed afterwards but the author does not need to be present.
D) 错误。这种评审由工具执行，无需人员参与。
Incorrect. This review is performed by a tool and not by a person.

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哪种评审实践会直接减少编码错误?

Which review practice results directly in a decrease in coding errors?

A) 观察者评审
Over-the-shoulder review
B) 结对编程
Pair programming
C) 同行评审
Peer review
D) 工具辅助评审
Tool-assisted review

A) 错误。允许在浏览已编写的软件的同时进行反馈。
Incorrect. This allows feedback while browsing the software that is already written.
B) 正确。结对编程表示共同编写软件。一人打字，另一人检查。这样有助于直接反馈，减少错误。（文献：A，第18章）
Correct. Pair programming means writing software together. One person types, the other one checks. This results in direct feedback and fewer mistakes. (Literature: A, Chapter 18)
C) 错误。同行评审是在软件编写完成后进行的评审。
Incorrect. Peer review is a review performed after writing the software.
D) 错误。工具辅助评审的反馈有限，诸多检查在记录代码以后进行。
Incorrect. The tool-assisted review is limited in feedback and many checks are done after checking-in the code.

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云服务提供商希望通过使用猿猴军团（可靠性监控服务）提高服务容量。

这种情况需要使用哪种猴子?

A cloud service provider wants to increase the capacity of their service by using a Simian Army Monkey.

Which monkey is needed in this case?

A) 医生猴子
Doctor monkey
B) 看门猴子
Janitor monkey
C) 延迟猴子
Latency monkey

A) 错误。医生猴子开始在各实例下运行健康检查。发现不健康的实例后，如果负责人未能及时解决根源问题，医生猴子会主动关闭该实例。这样并未提升容量。
Incorrect. The doctor monkey taps into health checks that run on each instance and finds unhealthy instances and proactively shuts them down if owners do not fix the root cause on time. This does not improve the capacity.
B) 正确。看门猴子通过搜索并处理未使用的资源，确保云环境的运行不存在混乱和浪费。（文献：A，附录9）
Correct. The janitor monkey ensures that their cloud environment is running free of clutter and waste; searches for unused resources and disposes of them. (Literature: A, Appendix 9)
C) 错误。延迟猴子通过在RESTful进行模拟的延迟或宕机，从而模拟服务退化，验证其确保依赖的服务机制可以适当响应。这样并未有改善容量的功能。
Incorrect. The latency monkey induces artificial delays or downtime in their RESTful client-server communication layer to simulate service degradation and ensure that dependent services respond appropriately. This does not improve the capacity.

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ABC公司采用DevOps工作法，希望推广开放、免责的学习环境。近期，ABC公司经历了一次重大的应用程序故障，但随后恢复了应用程序服务。

通常哪一项是免责事后分析会议上必须完成的**第一**要务？

Company ABC is adopting the DevOps way of working and wants to promote a learning environment that is open and blameless. ABC recently experienced a major application failure and was able to restore the application service.

What is usually the **first** task that must be completed during the blameless postmortem meeting?

A) 为重大的应用程序故障期间发生的相关事件建立时间表
Construct a timeline of relevant events as they occurred during the major application failure
B) 确定对策，防止未来再次发生重大的应用程序故障
Identify countermeasures to prevent the major application failure from reoccurring in the future
C) 确定重大的应用程序故障的根本原因，提出纠正措施，防止未来再次发生
Identify the root cause of the failure to propose a corrective action and prevent reoccurrence
D) 所有人都能在集中位置获取公布的事后分析，并学习该事后分析
Publish the postmortem to a centralized location where everyone can access it and learn from it

A) 正确。免责事后分析会议的第一要务是记录对发生的相关事件的时间线的最佳理解情况。包括采取的所有措施及具体时间（最好有聊天记录证明）、观察到的影响（最好是采用生产遥测得出的具体指标的形式，而不仅仅是个人的主观叙述）、遵循的调查路径、考虑的解决方法。（文献：A，第19章）
Correct. The first task in the blameless post-mortem meeting is to record the best possible understanding of the timeline of relevant events as they occurred. This includes all actions taken and at what time (ideally supported by chat logs), what effects have been observed (ideally in the form of the specific metrics from our production telemetry, as opposed to merely subjective narratives), all investigation paths that have been followed, and what resolutions were considered. (Literature: A, Chapter 19)
B) 错误。确定对策不是召开免责事后分析会议的第一要务。这个措施会在建立时间表后实施。
Incorrect. Identifying countermeasures is not the first task of conducting a blameless postmortem meeting. This is an action that would occur after constructing the timeline.
C) 错误。确定根本原因不必是召开免责事后分析会议的任务之一，而且绝对不是第一项任务。
Incorrect. Identifying the root cause is not necessarily a task of conducting a blameless postmortem meeting and definitely not the first thing that should be done.
D) 错误。公布事后剖析结果不是召开免责事后分析会议的第一要务。这个措施仅会在充分记录事后剖析结果后实施。
Incorrect. Publishing the post-mortem is not the first task of conducting a blameless postmortem meeting. This is an action that would occur only after the post-mortem has been documented completely.

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通过注入生产故障来产生恢复能力的实践会要求什么?

What is required when creating resilience by injecting production failures?

A) 定义故障模式
Defining the failure mode
B) 组织事后回顾会议
Organizing postmortem meetings
C) 培训人员
Training the people
D) 使用测试环境
Using a test environment

A) 正确。故障模式定义很重要，有助于保证这些故障模式按照设计要求运行。（文献：A，第19章）
Correct. Failure mode definition is important in order to ensure that these failure modes operate as designed. (Literature: A, Chapter 19)
B) 错误。事后回顾会议不属于注入方法的组成部分。
Incorrect. Postmortem meetings are not part of injection techniques.
C) 错误。通过故障注入吸取经验。
Incorrect. People learn from the injection.
D) 错误。仅需要生产环境。
Incorrect. Only a production environment is needed.

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哪一项是执行演练日（game day）计划的**第一个**步骤?

What is the **first** step of a plan for performing a game day?

A) 定义和执行演习
Define and execute drills
B) 识别并解决问题，接着测试
Identify and address problems, and test
C) 计划断电
Plan the outage
D) 准备和消除单点故障
Prepare and eliminate SPOFs

A) 错误。计划的第一个步骤："通过计划电厂断电的方式注入大规模的故障"。"制定计划并执行演习"是游戏设计者的任务。
Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection". "Define the plan and execute drills" is a task for the game makers.
B) 错误。计划的第一个步骤："通过计划电厂断电的方式注入大规模的故障"。
Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection".
C) 正确。步骤如下：1.第一个步骤是断电 2.根据此计划，团队采取措施，为断电做准备 3.措施可以包含需测试的流程 4.按计划进行断电 5.必须遵循预定义的流程进行。（文献：A，第19章）
Correct. The steps should be as follows:1. The first step is the planning of the outage 2. Based on the plan, the team can prepare the outage by taking measures 3. The measure may involve procedures that need to be tested 4. The outage is executed as planned 5. The defined process must be followed. (Literature: A, Chapter 19)
D) 错误。计划的第一个步骤："通过计划电厂断电的方式注入大规模的故障"。
Incorrect. The first aspect is to plan: "Plan the outage of a plant by a large-scale fault injection".

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哪一项属于非功能需求（NFR）?

What is an example of a non-functional requirement?

A) 在不同的版本间兼具向前和向后的兼容性
Have forward and backward compatibility between versions
B) 可以生成被推迟的工作进度的报表
Make it possible to report on delayed schedules
C) 为酒店预订系统登记财务交易
Register financial transactions for a hotel booking system

A) 正确。版本间的正向兼容性和反向兼容性属于非功能需求。（文献：A，第20章）
Correct. Forward and backward compatibility between versions is an example of a non-functional requirement. (Literature: A, Chapter 20)
B) 错误。报表是一种功能。因此，不属于非功能需求。
Incorrect. The report is a function and thus not a non-functional requirement.
C) 错误。财务交易是一种功能。非功能需求大多和系统的质量相关。
Incorrect. Financial transactions are a functionality. Non-functional requirements are related to the quality of the system.

33 / 40
为了成功创建可重复使用的运维用户故事，应执行哪项操作?

Which activity should be performed for the successful creation of reusable Operations user stories?

A) 将运维用户故事与相关的研发功能提升和缺陷关联起来
Associate Operations user stories to the relevant development enhancements and defects
B) 定义交接流程中的操作，接着使用适当工具和辅助性的工作流将这些操作自动化
Define activities within the handoff process and then automate these activities using the appropriate tools and supporting workflows
C) 确认所有必要的运维操作和须完成操作的人员
Identify all required operational work activities and actors needed to complete them

A) 错误。为了顺利生成可重复使用的运维用户故事，不一定要考虑这个操作。
Incorrect. This is not an activity that must be considered for the successful creation of reusable Operations user stories.
B) 正确。为了顺利生成可重复使用的运维用户故事，必须考虑这个操作。（文献：A，第20章）
Correct. This is an activity that must be considered for the successful creation of reusable Operations user stories. (Literature: A, Chapter 20)
C) 错误。为了顺利生成可重复使用的运维用户故事，不一定要考虑这个操作。
Incorrect. This is not an activity that must be considered for the successful creation of reusable Operations user stories.

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请考虑以下要素：

1. 变更请求
2. 部署流水线工具
3. 编译后的可执行文件
4. 操作指南和标准

其中哪两个要素一般存储在统一的共享源代码存储库里?

Please consider the following elements:
1. Change requests
2. Deployment pipeline tools
3. Compiled program executables
4.Tutorials and standards

Which two elements are typically stored in a single shared source code repository?

A) 1和2
1 and 2
B) 1和4
1 and 4
C) 2和3
2 and 3
D) 2和4
2 and 4

题目未完，接下一页

A) 错误。变更请求（1）不是具备知识性和可学习性的制品。因此，不应该存储在统一共享源代码存储库里。变更请求已经记录在产品的待办事项列表中，而不应该在共享源代码存储库里。部署流水线（2）工具应当存储在统一共享源代码存储库里。
Incorrect. Change requests (1) are not part of the single shared source code repository since these are not artifacts that encode knowledge and learning. Change requests are registered on the product backlog, which is not part of the shared source code repository. Deployment pipeline (2) tools are part of the single shared source code repository.

B) 错误。变更请求（1）不是具备知识性和可学习性的制品。因此，不应该存储在统一共享源代码存储库里。变更请求已经记录在产品的待办事项列表中，而不应该在共享源代码存储库里。操作指南和标准（4）应当存储在统一共享源代码存储库里。
Incorrect. Change requests (1) are not part of the single shared source code repository since these are not artifacts that encode knowledge and learning. Change requests are registered on the product backlog, which is not part of the shared source code repository. Tutorials and standards (4) are part of the single share source code repository.

C) 错误。编译后的可执行文件（3）不是具备知识性和可学习性的制品。因此，不应存储在统一共享源代码存储库里。可执行文件以二进制的形式存储在制品仓库（部署流水线的输出端），而非统一共享源代码存储库（部署流水线的输入端）。部署流水线（2）工具应当存储在统一共享源代码存储库里。
Incorrect. Compiled program executables (3) are not part of the shared source code repository since these are not artifacts that encode knowledge and learning. Executables are stored as binary in the artifact depository (output of the deployment pipeline) and not in the single shared source code repository (input of the deployment pipeline. Deployment pipeline tools (2) are part of the single shared source code repository.

D) 正确。部署流水线工具（2）及操作指南和标准（4）是具备知识性和可学习性的制品。因此，要存储在统一共享源代码存储库里。（文献：A，第20章）
Correct. Both deployment pipeline tools (2) and tutorials and standards (4) are part of the single shared source code repository, since these are artifacts that encode knowledge and learning. (Literature: A, Chapter 20)

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将局部发现转化成全局改进成果的目标是什么?

What is the goal of converting local discoveries into global improvements?

A) 提升实践的状态，不只是Dev和Ops实践，还包含整个组织各个方面的实践。
To elevate the state of the practice of not just Dev and Ops, but also the entire organization.
B) 使所有新服务和现有服务都能够更加方便地利用到集体知识。
To make it easier for all new and existing services to leverage the collective knowledge.
C) 创造协作性更好的企业文化以及更安全、更具弹性的系统。
To make the work culture more collaborative and to make the systems safer and more resilient.
D) 强化让每个人都感受到舒适、可靠的文化。
To reinforce a culture where everyone feels comfortable and responsible.

A) 正确。这是将局部发现转化成全局改进的目标。（文献：A，第20章）
Correct. This is the goal of converting local discoveries into global improvements. (Literature: A, Chapter 20)
B) 错误。这个目标是通过成文的非功能性需求(NFR)进行运维基础设计。
Incorrect. This is a goal of the underlying design for Operations through codified non-functional requirements (NFRs).
C) 错误。这个目标是预留时间，创建组织级学习和改进。
Incorrect. This is a goal of reserving time to create organizational learning and improvement.
D) 错误。这个目标是促进并将学习融入于日常工作中。
Incorrect. This is a goal of enabling and injecting learning into daily work.

36 / 40
开发人员可以为任何工程师提供便利，便于他们在应用程序和环境中准确地生成并使用日志记录和加密标准。

哪一个**不**是通过共享的源代码存储库提供支持的?

Developers can make it easy for any engineer to correctly create and use logging and encryption standards in their applications and environments.

Which is **not** a shared source code repository item that supports this?

A) 代码库及其推荐的配置
Code libraries and their recommended configurations
B) 部署包
Deployment packages
C) 操作系统（OS）包和应用的构建
Operating system (OS) packages and builds
D) 加密管理工具
Secret management tools

A) 错误。代码库及其推荐配置提供了有效的安全配置设置，专为其应用于应用程序的组件设计中，从而便于工程师准确地生成并使用日志记录和加密标准。
Incorrect. Since code libraries and their recommended configurations have effective security-specific configuration settings for the components they use in their application, it makes it easy for any engineer to correctly create and use logging and encryption standards.
B) 正确。部署包是工程师（运维）而非开发人员（开发）的交付物，因而不提供支持。问题是开发人员可以采取哪些措施使工程师在应用程序中准确生成并使用日志记录和加密标准。（文献：A，第22章）
Correct. Deployment packages are a deliverable of an engineer (Operations) rather than a Developer (Development), therefore it is not an item that supports this. The question is about what a developer can do to make it easy for any engineer to correctly create and use logging and encryption standards in their applications. (Literature: A, Chapter 22)
C) 错误。OS包和构应用的构建，专为在应用程序中使用的组件而设计，为其提供有效的安全配置设置，使工程师能够更方便地在应用程序中准确生成并使用日志记录和加密标准。
Incorrect. OS packages and builds make it easy for any engineer to correctly create and use logging and encryption standards in their applications, as it provides effective security-specific configuration settings for the components they use in their application.
D) 错误。加密管理工具提供有效的安全配置设置，如连接设置、加密秘钥等，使工程师能够更方便地在应用程序中准确生成并使用日志记录和加密标准。
Incorrect. Secret management tools make it easy for any engineer to correctly create and use logging and encryption standards in their applications, as it provides effective security-specific configuration settings like connection settings, encryption keys etcetera.

37 / 40
开发人员编写了新的代码时，始终伴随着非授权访问的风险。

哪一种控制措施**不**能规避此风险?

When developers are introducing code, there is always the risk of enabling unauthorized access.

Which control does **not** mitigate that risk?

A) 代码评审
Code reviews
B) 代码测试
Code testing
C) 有效地打补丁
Effective patching
D) 渗透测试
Penetration testing

A) 错误。代码评审可以发现恶意软件代码（利用这种代码，可以经由后门访问）。
Incorrect. The code review can reveal the introduction of malicious software code that enables access via backdoors.
B) 错误。代码测试可以发现非授权访问的情况。
Incorrect. The code testing can reveal the enabling of unauthorized access.
C) 正确。有效地打补丁不能发现开发人员新编写的代码，只能解决缺陷。（文献：A，第22章）
Correct. Effective patching does not reveal the introduction of code of the developer, it only solves bugs. (Literature: A, Chapter 22)
D) 错误。渗透测试可以发现应用程序中生成的或故意留下的漏洞（可以利用漏洞进行非授权访问）。
Incorrect. The penetration test can reveal weak spots in the application that have been created of left there on purpose to enable unauthorized access.

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下列哪种情况属于应用程序的遥测?

What is an example of creating telemetry in an application?

A) 操作系统(OS)的变更
Operating system (OS) changes
B) 每日评审系统日志
Review of system logs on a daily basis
C) 安全组的变更
Security group changes
D) 用户密码的重置
User password resets

A) 错误。这属于应用程序宿主基础设施环境的遥测范围，并非专门针对应用程序。
Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
B) 错误。这属于应用程序宿主基础设施环境的遥测范围，并非专门针对应用程序。
Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
C) 错误。这属于应用程序宿主基础设施环境的遥测范围，并非专门针对应用程序。
Incorrect. This is use of telemetry for the infrastructure environment where the application is hosted, and not specifically to the application.
D) 正确。这是针对应用程序的遥测范围。（文献：A，第22章）
Correct. This is use of telemetry specific to an application. (Literature: A, Chapter 22)

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哪个流程支持合规性要求，同时也是降低运维和安全风险的主要控制措施?

Which process serves as a primary control to reduce Operations and security risks and also supports compliance requirements?

A) 变更管理流程
Change management process
B) 配置管理流程
Configuration management process
C) 发布和部署管理流程
Release and deployment management process
D) 服务级别管理流程
Service level management process

A) 正确。几乎所有的大型IT企业目前都设置了变更管理流程。这是降低运维和安全风险的主要控制措施。合规性和安全管理员依靠变更管理流程，以满足合规性要求。他们一般要求提供证明，即所有变更已获得了适当授权。（文献：A，第23章）
Correct. Almost any IT organization of a significant size will have existing change management processes, which are the primary controls to reduce Operations and security risks. Compliance and security managers place reliance on change management processes for compliance requirements, and they typically require evidence that all changes have been authorized appropriately. (Literature: A, Chapter 23)
B) 错误。本流程提供有关服务和各配置项的信息，可用于发现并分析潜在风险和改进目标，但并不有助于降低风险。配置管理计划、实施、控制和报告并核实配置项。
Incorrect. This process provides information about the services and each configuration item. This could be used to analyze and detect potential risks and improvements, but is not the process responsible for reducing those risks. Configuration management plans, implements, controls, and reports, and verifies configuration items.
C) 错误。发布和部署管理流程落实软件发布审批的流程，包括诸多变更的审批。变更管理流程控制、审批变更，接着协调发布和部署管理流程中各方的努力。
Incorrect. Release and deployment management is the process that actually implements the approved release that can include numerous approved changes. The change management process controls and approves changes and then coordinates efforts with the release and deployment management process.
D) 错误。SLM流程为按需交付服务级别提供保障，满足业务要求。此流程声明了所需的合规性和安全要求，但并非直接有助于降低风险。
Incorrect. The SLM process ensures the delivery of the required level of service, as agreed with the business. It does state which compliance and security requirements are needed, but it is not the process that will help reduce those risks.

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哪一项属于采用职责分离控制措施的缺点?

What is a drawback when adopting the separation of duty control?

A) 职责分离控制措施通常会减少工程师收到的关于其工作的反馈，并使接收反馈的速度变慢，阻碍了开发工作。
The separation of duty control can often impede development efforts by slowing down and reducing the feedback that engineers receive on their work.

B) 职责分离控制措施要求开发人员向代码管理员提交变更内容，由代码管理员评审、审批变更，接着再应用到生产。
The separation of duty control requires the Developer to submit changes to a code librarian, who would review and approve the change before it is promoted to production.

C) 职责分离控制措施要求检查每一次代码提交，并进行代码评审，从而为工作质量提供必要保证。但职责分离控制措施会产生不必要的工作。
The separation of duty control results in unnecessary work since it requires inspection of code check-ins, and code reviews, providing the necessary reassurance about the quality of our work.

A) 正确。职责分离通常会减少工程师收到的关于其工作的反馈并使接收反馈的速度变慢，阻碍工作。这样会妨碍工程师对工作质量承担全部责任，也减弱了企业创建组织级学习的能力。因此，在可能情况下，我们应该避免将职责分离作为控制措施，而应选择结对编程、持续检查每一次代码提交、代码评审等控制措施。（文献：A，第23章）
Correct. Separation of duty can often impede this by slowing down and reducing the feedback engineers receive on their work. This prevents engineers from taking full responsibility for the quality of their work and reduces a firm's ability to create organizational learning. Consequently, wherever possible, we should avoid using separation of duties as a control. Instead, we should choose controls such as pair programming, continuous inspection of code check-ins, and code review. (Literature: A, Chapter 23)

B) 错误。这是过时的支持软件开发生命周期(SDLC)的方法，而不是DevOps。DevOps推荐的控制措施包括结对编程、持续检查每一次代码提交及代码评审。这些控制措施为工作质量提供必要保证。此外，将这些控制措施落实到位后，如果要求职责分离，我们可以利用已经建立的控制措施，证明我们实现了等效结果。
Incorrect. This reflects the old approach supporting the software development life cycle (SDLC) and not DevOps. The recommended controls for DevOps include pair programming, continuous inspection of code check-ins, and code review controls. These controls provide us the necessary reassurance about the quality of our work. Furthermore, by putting these controls in place, if separation of duties is required, we can show that we achieve equivalent outcomes with the controls we have created.

C) 错误。我们应该避免将职责分离作为控制措施，而应选择结对编程、持续检查每次代码提交、代码评审等控制措施。此外，将这些控制措施落实到位后，如果要求职责分离，我们可以利用已经建立的控制措施，证明我们实现了等效结果。
Incorrect. We should avoid using separation of duties as a control. Instead, we should choose controls such as pair programming, continuous inspection of code check-ins, and code review. Furthermore, by putting these controls in place, if separation of duties is required, we can show that we achieve equivalent outcomes with the controls we have created.

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

联系 EXIN

www.exinchina.cn

info.china@exin.com

WeChat ID: EXINCH