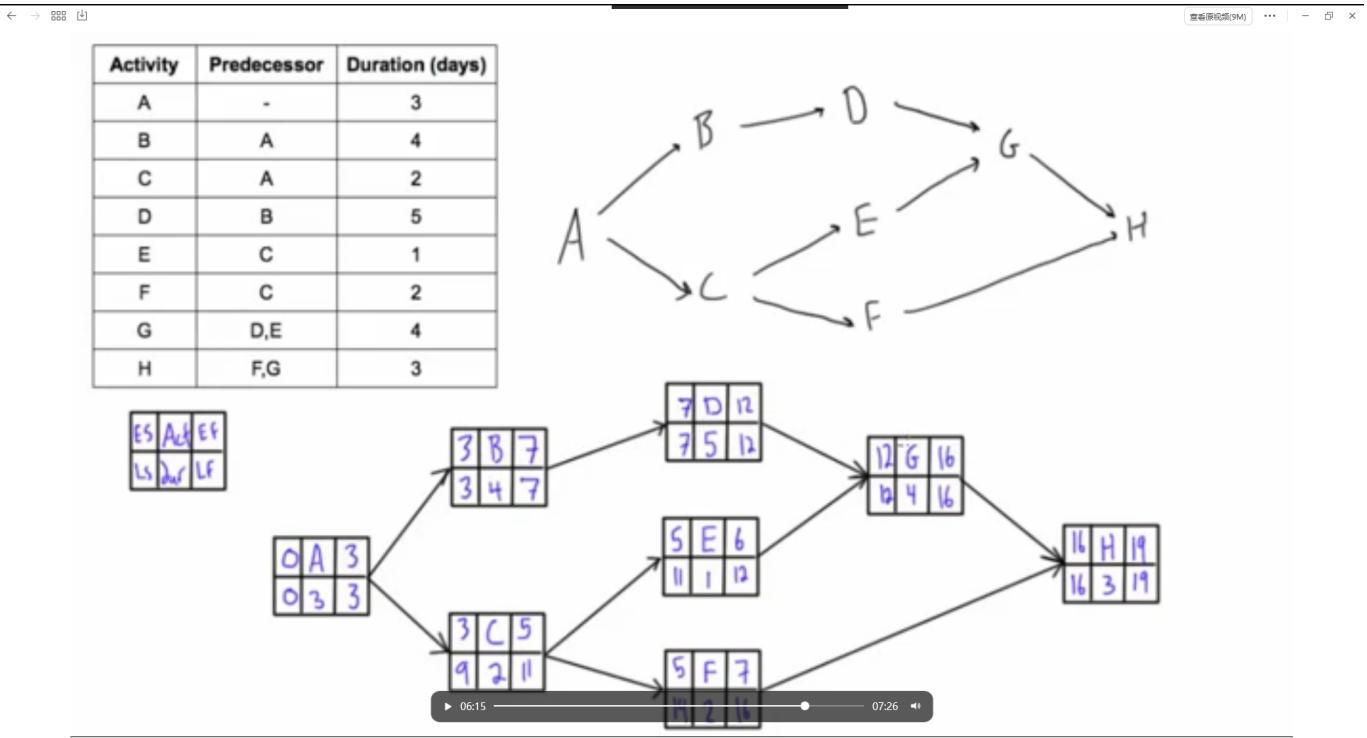


Subjective questions

Q1 Network



- 注意格式!
 - 上层是forward (从左到右)
 - eg. 3 B 7, A结束后是3, 过完B是7
 - eg. 12 G 16, D过完是12, E过完是6, 取更大的
 - 下层是backward (从右到左)
 - eg. C 9 2 11, 取E F中更小的
- a) Draw a precedence network diagram. b) Perform the forward pass to find the earliest start and finish times. c) Perform the backward pass to find the latest start and finish times. d) Determine the critical path of the project. e) Calculate the project's completion date.

Q2 Work Breakdown Structure(WBS)

考试估计考online shopping, 给的例子是online library system

Online Library System (1)

```
|—— Project Management (1.1)
| |—— Planning (1.1.1)
| |—— Scheduling (1.1.2)
| |—— Budgeting (1.1.3)
| |—— Risk Management (1.1.4)
| |—— Quality Assurance (1.1.5)
|
|—— Requirements Analysis (1.2)
| |—— Stakeholder Identification (1.2.1)
| |—— Requirements Gathering (1.2.2)
| |—— Requirements Documentation (1.2.3)
| |—— Requirements Validation (1.2.4)
|
|—— System Design (1.3)
| |—— System Architecture Design (1.3.1)
| |—— Database Design (1.3.2)
| |—— User Interface Design (1.3.3)
| |—— Security Design (1.3.4)
|
|—— Development (1.4)
| |—— Front-end Development (1.4.1)
| | |—— Web Interface Development (1.4.1.1)
| | |—— Mobile Interface Development (1.4.1.2)
| |—— Back-end Development (1.4.2)
| | |—— Server-side Logic (1.4.2.1)
| | |—— Database Integration (1.4.2.2)
| | |—— API Development (1.4.2.3)
| |—— Security Implementation (1.4.3)
|
|—— Testing (1.5)
| |—— Unit Testing (1.5.1)
| |—— Integration Testing (1.5.2)
| |—— System Testing (1.5.3)
| |—— User Acceptance Testing (UAT) (1.5.4)
| |—— Security Testing (1.5.5)
|
|—— Deployment (1.6)
| |—— Deployment Planning (1.6.1)
| |—— Server Setup (1.6.2)
| |—— Data Migration (1.6.3)
| |—— Launch (1.6.4)
|
|—— Training and Support (1.7)
| |—— User Training (1.7.1)
| |—— Technical Support (1.7.2)
| |—— Documentation (1.7.3)
| |—— Maintenance and Updates (1.7.4)
```

- PM不要忘记, important

Q3 Calculation

Earned Value Variances

Cost Variance (CV) = Earned Value (EV) - Actual Cost (AC)	> 0 means under budget < 0 means over budget
Schedule Variance (SV) = Earned Value (EV) - Planned Value (PV)	> 0 means ahead of schedule < 0 means behind schedule

Earned Value Indices

Cost Performance Index (CPI) = EV/AC	> 1 means better progress for the money < 1 means less progress for the money
Schedule Performance Index (SPI) = EV/PV	> 1 means more work performed than scheduled < 1 means less work performed than scheduled
Project Percent Complete = $(EV/BAC) * 100$	Percent of project work complete. Where BAC = Budget at Completion
To Complete Performance Index (TCPI) = $(BAC-EV)/(BAC-AC)$	The cost performance index required to complete the project on budget.

Note: Comparing CPI and TCPI at any point in a project gives a unique insight into the likelihood of a project completing on budget. For example if a project is running at a CPI of 0.8 with a TCPI of 1.2 required to complete on budget; such a step change is unlikely without major management intervention.

Earned Value Forecasts

- Homework Example

1. A project has a total budget (BAC) of \$200,000 and is planned to last 10 months. At the end of the 5th month, the following data is available:

Planned Value (PV): \$100,000

Earned Value (EV): \$90,000

Actual Cost (AC): \$110,000

↳

Calculate the following:

a) Schedule Variance (SV)

b) Cost Variance (CV)

c) Schedule Performance Index (SPI)

d) Cost Performance Index (CPI)

...

Solution:

a) Schedule Variance (SV)

$$SV = EV - PV$$

$$SV = 90,000 - 100,000$$

$$SV = -10,000$$

b) Cost Variance (CV)

$$CV = EV - AC$$

$$CV = 90,000 - 110,000$$

$$CV = -20,000$$

c) Schedule Performance Index (SPI)

$$SPI = \frac{EV}{PV}$$

$$SPI = \frac{90,000}{100,000}$$

$$SPI = 0.90$$

d) Cost Performance Index (CPI)

$$CPI = \frac{EV}{AC}$$

$$CPI = \frac{90,000}{110,000}$$

$$CPI = 0.818$$

Q4 Scrum

What is Scrum and how does it benefit project management(pm)?

- Scrum is an Agile framework for managing complex projects, typically software development. It promotes an iterative, incremental approach to optimize predictability and control risk. Scrum is well-regarded for its flexibility, collaborative nature, and ability to deliver high-value products to customers efficiently.
- Key Roles
 - Product Owner
 - Scrum Master
 - Development Team

- Core Events
 - Sprint Planning
 - Daily Scrum
 - Sprint Review
 - Sprint Retrospective
- Scrum Artifacts
 - Product Backlog
 - Sprint Backlog
 - Increment
- Benefits of Scrum
 - Flexibility and Adaptability
 - Improved Collaboration
 - Enhanced Transparency
 - Faster Delivery
 - Continuous Improvement

写对以上key words即可，后面的介绍可以用自己的话来说

Key Roles:

1. **Product Owner:** The Product Owner represents stakeholders and is responsible for maximizing the product's value. They manage the Product Backlog, ensuring it is clear, prioritized, and conveys what is needed for the product.
2. **Scrum Master:** The Scrum Master facilitates the process, helps remove impediments, and ensures the team adheres to Scrum practices. They act as a coach, supporting the team in self-organization and continuous improvement.
3. **Development Team:** This is a cross-functional group responsible for delivering the product increment. They self-organize to decide how to accomplish the work within a Sprint.

Core Events:

1. **Sprint Planning:** The team collaborates to define what can be delivered in the upcoming Sprint and how to achieve it. The Product Owner presents prioritized items from the Product Backlog, and the team selects those they commit to completing.
2. **Daily Scrum:** A short, daily meeting where team members synchronize their work and plan for the next 24 hours. Each member answers three questions: What did I do yesterday? What will I do today? Are there any impediments?
3. **Sprint Review:** At the end of each Sprint, the team demonstrates the increment to stakeholders, gathers feedback, and discusses what to do next. This ensures continuous alignment with stakeholder needs and expectations.
4. **Sprint Retrospective:** The team reflects on the Sprint, identifying what went well, what could be improved, and how to enhance their processes. This fosters a culture of continuous improvement.

Scrum Artifacts:

1. **Product Backlog:** An evolving list of product requirements ordered by priority. The Product Owner manages it, ensuring it reflects the current needs and goals of the project.
2. **Sprint Backlog:** A list of tasks the Development Team commits to completing during the Sprint. It includes selected items from the Product Backlog and a plan for delivering them.
3. **Increment:** The sum of all completed Product Backlog items at the end of a Sprint, representing a potentially shippable product.

Benefits of Scrum:

1. **Flexibility and Adaptability:** Scrum's iterative nature allows for frequent reassessment and adaptation of plans based on feedback and changing requirements.
2. **Improved Collaboration:** The defined roles and regular meetings foster better communication and collaboration among team members and stakeholders.
3. **Enhanced Transparency:** Scrum's emphasis on visibility ensures all stakeholders are aware of the project's progress, risks, and any issues.
4. **Faster Delivery:** By focusing on delivering small increments of value, Scrum enables quicker releases, allowing for faster feedback and adjustment cycles.
5. **Continuous Improvement:** Regular retrospectives promote a culture of learning and improvement, helping teams to enhance their processes continuously.

Q5 Risks&Planning

1. List common sources of risks on IT projects. ↵

Technical Risks: Inadequate technology, system failures, software bugs. ↵

Project Management Risks: Poor planning, unclear requirements, scope creep. ↵

Organizational Risks: Resource availability, organizational changes, stakeholder conflicts. ↵

External Risks: Regulatory changes, market fluctuations, vendor reliability. ↵

Security Risks: Data breaches, cyber-attacks, compliance issues. ↵

列出 IT 项目中的常见风险来源。 ↵

技术风险: 技术不足、系统故障、软件漏洞。 ↵

项目管理风险: 规划不当、需求不明确、范围蔓延。 ↵

组织风险: 资源可用性、组织变更、利益相关者冲突。 ↵

外部风险: 法规变化、市场波动、供应商可靠性。 ↵

安全风险: 数据泄露、网络攻击、合规问题。 ↵

2. What are the key elements of planning risk management? ↵

Risk Management Plan: Defines how to approach, plan, and execute risk management activities. ↵

Risk Identification: Process of identifying risks that might affect the project. ↵

Risk Analysis: Qualitative and quantitative methods to analyze risks. ↵

Risk Response Planning: Strategies to enhance opportunities and reduce threats. ↵

Risk Monitoring and Control: Tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness. ↵

风险管理规划的关键要素是什么？ ↵

风险管理计划: 定义如何进行风险管理活动的方法、计划和执行。 ↵

风险识别: 识别可能影响项目的风险的过程。 ↵

风险分析: 使用定性和定量方法分析风险。 ↵

风险应对规划: 增强机会和减少威胁的策略。 ↵

风险监控和控制: 跟踪已识别的风险，监控残留风险，识别新风险，并评估风险过程的有效性。 ↵