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| 考試科目 | 管理資訊系統 | 系所別 | 資訊管理學系/資管組 | 考試時間 | 2月3日(五)第四節 |
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Essay Questions (100%) (You may answer the questions in either Traditional Chinese or English.)

1. (40%) One of the Taiwanese political opinion leaders adopted the idea of “canary in the mine pit” to describe the election results in the end of 2022. Actually, the metaphor of “canary” is not exclusive to the field of politics. “Canary in the coal mine” was widely adopted to describe the economic settings of Singapore in 2019. Likewise, “canary development”, “canary testing”, or even “canary solutions” has been introduced to the IT industry for decades. In the era of cloud services, the canary tools have been available online. For instance, a tool of “Automated Canary Analysis” called Kayenta was introduced by Google and Netflix in 2018. The open-source tool is integrated with various monitoring tools such as Stackdriver, Prometheus, Datadog, and Netflix Atlas.

(a) What is “canary development”, “canary testing”, or “canary solutions” in the IT industry? (5 pts)

(b) Besides the canary, IT developers generally need to follow one of the following frameworks to design their software products/services: MVC, MVP, and MVVM. Please explain and compare these three different software architectural patterns carefully. (10 pts)

(c) To develop IT products, especially software modules, “long parameter list”, “divergent change”, “shotgun surgery”, and even “a big ball of mud” are common problems. Scholars and practitioners have provided multiple solutions such as the agile development methods like Scrum or Kanban with clean architecture and domain-driven design (DDD). Pair programming and mob programming are also increasingly popular due to their contributions to productivity with high quality. Please describe how to implement the DDD with Scrum or Kanban during your information systems development process. (15 pts)

(d) Apparently, DDD is not the silver bullet. Please provide a scenario when the development group(s) better adopt the traditional analysis or object-oriented analysis and design (OOAD) with waterfall approach instead of the DDD with the agile methods. Also, please explain why you will prefer the traditional analysis or OOAD with the waterfall approach rather than the DDD with the agile development methods in your proposed scenario in details. (10 pts)

2. (15%) “Create an environment with digital affordance and for poetic dwelling.” This is the main slogan proposed by the current president Dr. Tsai-Yen Li for 2022 NCCU Presidential Election. President Li said that he wishes to transform the university into a digital, diverse, strong, public, and poetic place. As a prospective student, you may be interested in what and how the new president will do to make NCCU a better place for faculty, students, and alumni to work, learn, and relax.

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In fact, “digital affordance” has been a popular research target in the field of information systems for at least a decade. One of the premier journals, *MIS Quarterly*, just awarded its “Impact Award” to a paper discussed the concept of affordance in 2011. According to your knowledge, please describe and explain the definition of “digital affordance”. Also, please provide a possible solution to “create an environment with digital affordance and for poetic dwelling” for an organization. (Note: it is **NOT** necessary to provide a solution for NCCU or any other college campuses.) (15 pts)

3. (45%) “Squid Game”, “Alice in Borderland”, “Extraordinary Attorney Woo” “First Love”, “Transit Love”, and “Single’s Inferno”. These online video on-demand programs and several others on the over-the-top media services from South Korea and Japan did make people around the world crazy for their stories and cultures. For instance, Utada Hikaru’s song which released in 1999 re-entered the 2022 music charts in Taiwan because of “First Love”. “Transit Love” attracted multiple new tourists from around the world to visit Jeju Island. Netflix started a lawsuit with SK Broadband due to the tremendous amount of streaming to watch “Squid Game”. The digital entertainment channels and materials are changing our daily lives in different forms.

(a) The ongoing lawsuit between Netflix and SK Broadband is about net neutrality. What is net neutrality? Do you support Netflix or SK Broadband? Please analyze the possible concerns regarding to this issue, and then provide a solution if the similar debate occurs in Taiwan. You should consider the current situation of net neutrality and the ISPs in Taiwan to provide your solution. (15 pts)

(b) In the game of “The King of Diamonds” introduced in “Alice in Borderland”, a typical scenario of “Keynesian beauty contest” with “Nash equilibrium” was adopted to develop the game strategy:

Five participants need to choose an integer from 0 to 100 in the given time. The average of the five chosen numbers will be multiplied by 0.8 to decide the target number. Winner of each round will be the person who chooses the number closest to the calculated target number. This constitutes one round. All losers will lose a point. Participant(s) will be eliminated once they reach -10 points. If participants are all rational, the Nash equilibrium of this game will be apparent. However, the Nash equilibrium may not be optimal solution because people may be irrational. Participants will need to guess others’ guess to win this game.

Now you are going to do research on information systems (IS) (including IT strategy, supply chain management, e-commerce, digital marketing, etc.) with the adoption of Nash equilibrium, please provide a possible IS-related research question and simply explain why it is important to study. It is okay if the topic has been discussed by past scholars. The application of “Keynesian beauty contest” is not necessary. (15 pts)

(c) In the beginning episodes of “Transit Love Season 2”, participants used MBTI to know each other. MBTI (Myers-Briggs Type Indicator) is a tool to know individual’s psychological preferences in how the person

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perceives the world and makes decisions. Specifically, the combination of the four different dichotomies creates 16 personalities.

| Dichotomies | |
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| Extraversion (E) | (I) Introversion |
| Sensing (S) | (N) Intuition |
| Thinking (T) | (F) Feeling |
| Judging (J) | (P) Perception |

Examples can be shown in the following table. For instance, Hsu has a MBTI result of INTJ. It means Hsu may be an introvert person (I) who prefers to intuitively take in information (N), think twice when making decision (T), and generally follow rules and step-by-step instructions (J). People claim that INTJ individuals are “masterminds” who are experts in contingency planning and entailment organizing.

Table name: employee

Data types: (id: int; last_name: varchar; MBTI: varchar; salary: int; supervisor_id: int)

| id | last_name | MBTI | salary | supervisor_id |
|----|-----------|------|--------|---------------|
| 3 | Hsu | INTJ | 78010 | 7 |
| 52 | Lin | ENFJ | 78000 | 7 |
| 6 | Kim | ESTP | 78000 | 7 |
| 19 | Weng | ENTJ | 72050 | 1 |
| 2 | Zheng | ISFJ | 78010 | 3 |
| 4 | Chuang | ISFP | 83040 | 7 |
| 5 | Chou | INFP | 78200 | 7 |
| 30 | Lee | ESFP | 72050 | 2 |
| 22 | Chao | ENFJ | 78000 | 7 |
| 8 | Shi | INFJ | 78000 | 7 |

Based on the information provided above, **write a SQL query** to find the highest salary received by the employee or employees who works under the supervisor id 7 **AND** who is identified as an extravert person. We need to receive the output list with the last name, MBTI, and salary. Also, alphabetically sort by the last names if we have more than one result. (15 pts)

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| 備註 | 一、作答於試題上者，不予計分。 二、試題請隨卷繳交。 |
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