Exam2

● Graded

Student

Asrar Syed

Total Points

93 / 100 pts

Question 1

MC1   **2** / 2 pts

✔ **– 0 pts** Correct

     – 2 pts Click here to replace this description.

Question 2

MS2-4   **6** / 6 pts

✔ **– 0 pts** Correct

Question 3

MC5   **2** / 2 pts

✔ **– 0 pts** Correct

     – 2 pts Click here to replace this description.

Question 4

MC6   **2** / 2 pts

✔ **– 0 pts** Correct

     – 2 pts Click here to replace this description.

Question 5

MS7-10   **8** / 8 pts

✔ **– 0 pts** Correct

     – 8 pts Click here to replace this description.

     – 2 pts Click here to replace this description.

     – 4 pts Click here to replace this description.

Question 6

MC11   **2** / 2 pts

✔ **– 0 pts** Correct

     – 2 pts Click here to replace this description.

Question 7

MC12   💬   **0** / 2 pts

    – 0 pts Correct

    ✔ **– 2 pts** Click here to replace this description.

    💬 Correct Answer: D

Question 8

MC13   **2** / 2 pts

    ✔ **– 0 pts** Correct

    – 2 pts Click here to replace this description.

Question 9

MS14-16   **6** / 6 pts

    ✔ **– 0 pts** Correct

    – 2 pts Click here to replace this description.

Question 10

MC17   **2** / 2 pts

    ✔ **– 0 pts** Correct

    – 2 pts Click here to replace this description.

Question 11

MS18-20   **6** / 6 pts

    ✔ **– 0 pts** Correct

    – 2 pts Click here to replace this description.

Question 12

MC21   **2** / 2 pts

    ✔ **– 0 pts** Correct

    – 2 pts Click here to replace this description.

    – 0 pts Click here to replace this description.

Question 13

MS22-23   **4** / 4 pts

    ✔ **– 0 pts** Correct

    – 4 pts Click here to replace this description.

    – 2 pts Click here to replace this description.

Question 14

MS24-25   **4** / 4 pts

✔ **– 0 pts** Correct

    – 4 pts Click here to replace this description.

    – 2 pts Click here to replace this description.

Question 15

WR26   🔲 **16** / 18 pts

    – 0 pts Correct

    – 18 pts Click here to replace this description.

    – 3 pts Click here to replace this description.

✔ **– 2 pts** Click here to replace this description.

    – 5 pts Click here to replace this description.

💬 Use Alt Block for Valid and Invalid Inputs

Question 16

WR27   🔲 **11** / 12 pts

    – 0 pts Correct

    – 12 pts Click here to replace this description.

✔ **– 1 pt** Click here to replace this description.

    – 6 pts Click here to replace this description.

    – 8 pts Click here to replace this description.

    – 3 pts Click here to replace this description.

💬 A little more explanation

Question 17

WR28   🔲 **18** / 20 pts

    – 0 pts Correct

    – 20 pts Click here to replace this description.

✔ **– 2 pts** Click here to replace this description.

    – 4 pts Click here to replace this description.

    – 6 pts Click here to replace this description.

💬 Use Alt Block for Approved and Disapproved Transactions

PRINT NAME IN ALL CAPS: _ASRAR SYED_

GSU Panther ID: _0026790883_

Each multiple-choice answer or multi-select answer is valued at 2pts. **(50pts)** Write the capital letter (A, B, C, D) in the blank beside the question number in multiple-choice. *Circled answers only will not be graded*, i.e., zero points if nothing is written in blank beside a question number. In multi-select (MS), place an 'X' beside your choices. **Do not give lightly marked choices to confuse the grader**. Wrongly marked choices will be given negative points.

B 1. A design pattern is defined as:
     A) something concrete in coded syntax about a software problem
     B) a way of reusing abstract knowledge about a software problem
     C) a guided template for developing Java specific solution about a software problem
     D) forces the use of procedural models for a software problem

2-4 MS. Choose **3** types of design categories. (Mark a dark, clear 'X' for choices)
    _____ Expressional
    __X__ Creational
    _____ Virtual
    __X__ Structural
    __X__ Behavioral

B 5. What can a singleton pattern be used to do?
     A) create different types of database connections based on a configuration
     B) create a central logging object that can be accessed from anywhere in an application
     C) allow two incompatible databases to work together
     D) decouple implementation of a GUI from its abstraction to be used in different GUI frameworks

A 6. What diagram shows/models the static structure of a system?
     A) class   C) object
     B) use case   D) sequence

7-10 MS. Choose **4** elements of any design patterns. (Mark a dark, clear 'X' for choices)
    _____ Target programming language
    __X__ A meaningful identifier
    _____ Date of creation
    __X__ Problem description
    _____ Risk evaluation
    __X__ Consequences
    __X__ Solution description

C 11. Choose a design pattern that separates the *display* of an object-state from the object itself.
     A) Façade   C) Observer
     B) Decorator   D) Strategy

C 12. Choose a design pattern that is used to establish a dynamic variation/execution of an algorithm.
     A) Façade   C) Decorator
     B) Adapter   D) Strategy

D 13. The 'class diagram' in UML for software development shows what?
     A) API movement   C) functional requirements
     B) testing plans   D) relationships and interactions

14-16 MS. Choose **3** benefits of code review and documentation. (Mark a dark, clear '**X**' for choices)

_____ conformance checking
__X__ enhance security
_____ Date of creation
_____ longer time for completion
__X__ improve quality of code
__X__ discover bugs earlier

_____ 17. What operation does JavaDoc, a software tool, do for the programmer?
       A) generate standard structures for a class file
       B) generate standard structures for an interface class file
       C) generate standard documentation in HTML format
       D) generate UML diagrams for documentation purposes

18-20 MS. Choose **3** approaches to code review. (Mark a dark, clear '**X**' for choices)

_____ keystroke checking
__X__ Agile
__X__ tool-assisted
_____ text messaging
_____ AI processor
__X__ pair programming

_____ 21. What does the term 'UML in software development mean?
       A) Unique Modification Loading
       B) Universal Modification Language
       C) Unified Modeling Language
       D) Unique Manifest Logging

22-23 MS. Choose **2** UML diagram types. (Mark a dark, clear '**X**' for choices)

__X__ Structural
_____ Virtual
__X__ Behavioral
_____ Abstractional
_____ Functional

24-25 MS. Choose **2** qualities in UML from a 'context diagram'. (Mark a dark, clear '**X**' for choices)

_____ syntax validation
__X__ system scope definition
_____ latency measurement
__X__ data flow across system boundaries
_____ shows quality of code

26. Use these functional requirements to draw a simple UML sequence diagram to verify user's PIN in using an ATM. **(18pts)**

    a)   user inserts card into *ATM*
    b)   ATM requires user PIN
    c)   User inputs PIN
    d)   ATM verifies PIN with Bank Account System
    e)   ATM shows result to user (result of validation)
    f)   If invalid, ATM asks to rekey PIN
    g)   If valid, the process ends
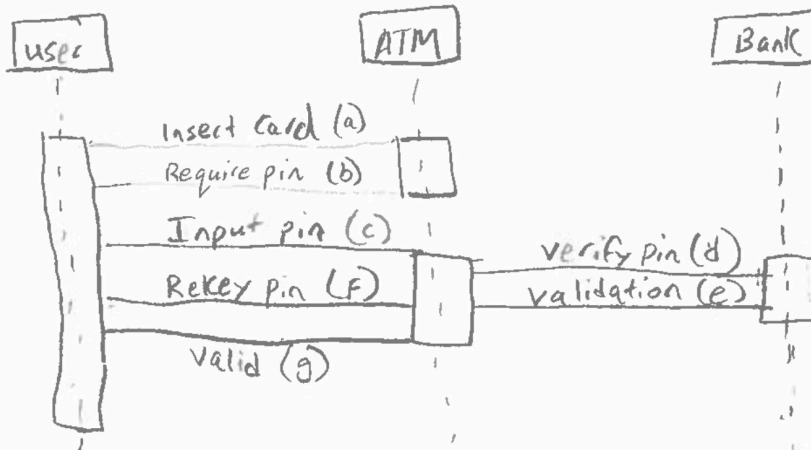
27. You are a software developer fired from the IRS through the new DOGE. You now work as a contract programmer and your company is designing a mobile application for peer-to-peer financial transactions that will become part of the 'X' messaging application. Elon wants to kill Venmo, Apple Pay, and PayPal. Features you need to create all run only in Chrome browser. (Elon hates Apple and Microsoft!) The system will utilize a user's 'X' account information that will be linked to a financial institution or Google Pay. **Give 4 functional requirements and 4 non-functional requirements. (Each more than single word...) (12pts)**

Functional req.

- utilize x's account information

- link system to a financial institution

- Should connect with other users and allow peer-to-peer transactions

- design a mobile application that handles financial transactions

Non-Functional req.

- Features can only run in Chrome browser

- Can't run on Apple or microsft

- Can't use Apple pay / Paypal

- Can only use Goole pay or any other financial institutions

∠8. You are developing a software system for a self-parking garage with a fixed amount (not based on time). Drivers enter the parking lot, take a ticket, and the system takes a picture of their tag. They park their car and pay for their parking fee before exiting the lot. A driver should pay for parking at the self-service kiosk. They shall scan their parking ticket and pay using a credit or debit card. The system asks if they want to receive a receipt for payment. **(20pts)**

Functional requirements:

- The system identifies a vehicle with a picture of their tag and parking ticket. ✓
- The system displays the set parking fee. ✓
- The user pays using a credit card or debit card before leaving (Set price). ✓
- The system validates the user's card information and processes the payment.
- Upon successful payment, the system asks if a receipt is needed. ✓
- The system displays an error message if the payment type is declined or if there are insufficient funds. ✓

Draw a UML sequence diagram that depicts the interaction between the *user*, the *self-service kiosk*, the *payment gateway*, and *financial system* involved in the process to pay for parking. No need to have long explanations on actions between components, simple words are good.