IT5014

PROGRAMMING PRINCIPLES

Project

Course Level: 5

Course Credits: 15

Weighting Towards the Final Grade: 50%

Alternative Course Codes: IT5024, IT5034, IT5046

OVERVIEW

This project is an **individual project** where you will demonstrate your ability to develop a solution to a problem outlined below based on the client requirements provided.

Assessment Conditions

- It is recommended that you spend **15 to 20 hours** on this assessment.
- The course lecturer for this course will communicate the due dates for this assessment to you.
- You can access all course materials and any other resources you wish to use as you work on this assessment.
- The work you submit must be your own work.
- You can ask a lecturer to clarify the instructions and for advice, but they cannot assist you in completing the tasks required – you must carry out the tasks yourself!

Success Criteria

To be successful in this assessment you must obtain a minimum of 50% of the total available marks. The rubrics are in the marking form provided with this document. Please read them to make yourself familiar with the expectations for this project.

You are allowed a maximum of two attempts. The maximum percentage to be awarded on a second assessment attempt is 50%.

This project contributes to **50% of the final course grade**.

INSTRUCTIONS

Overview of Tasks

The tasks are not sequential: they can happen in parallel or iteratively.

Part 1. Reflective journal

Part 2. Solution development

SCENARIO

Client Requirements

The client would like a ticketing system prototype developed. The help desk ticketing system should handle tickets from internal customers only. Tickets are requests for assistance from the help desk by staff members of the company.

Tickets:

- There are two ways of submitting an internal ticket: either by providing staff ID, ticket creator name, contact email and the description of the issue or only by providing staff ID and the description of the issue
- If an internal ticket is submitted without ticket creator name and contact email specified, the system should automatically assign values for creator name and contact email as "Not specified".
- Internal Tickets' ticket number should be assigned automatically using the counter static field plus 2000.
- For your information, StaffID is made up of the employee's name followed by the first letter of the employee's surname.

Responding to tickets:

- If the ticket's description of the issue contains the words "Password Change", the new password should be generated following the rule:
    - The first two characters of the staffID, followed by the hexadecimal representation of the ticket number, followed by a hexadecimal representation of the first three characters of the timestamp.

      You may find the following link useful: How to convert between hexadecimal strings and numeric types (C# Programming Guide)
- There should be an option after the ticket has been submitted to respond to a ticket by providing a feedback response.

Statistics:

- There should be a way to keep track of the number of tickets submitted, number of resolved tickets and number of open tickets, and a way to display those statistics to the console.
- If the staff member has submitted the "Password change" request, after the new password is generated and the ticket's response has been updated, the ticket should close, with the number of closed tickets increased and the number of open tickets reduced by 1. Ticket's status should be changed to "Closed".
- Once a member of the IT department provides the response to a ticket, the ticket should close, with the number of closed tickets increased and the number of open tickets reduced by 1. Ticket's status should be changed to "Closed".
- There should be an option for the IT department to reopen the ticket. At this point the number of open tickets should be increased and the number of closed tickets should be reduced by 1. Ticket's status should be changed to "Reopened"

Displaying the ticket:

- There should be a way to display the ticket information:
    - ticket number, name of the ticket's creator, staffID, email address, description of the issue, response from the IT department and ticket status (open, closed or reopened).

The output format is shown in the example on page 6.

Technical Requirements

The senior developer has provided you with the following technical requirements for the project.

- The Ticket class should contain common ticket information in the Ticket class.
- The Ticket class should also have methods allowing the IT team to respond to the tickets, specifically resolve, reopen and provide a response to the ticket.
- The object creation of Ticket type should be performed through the use of constructors.
- The Ticket class should contain a method for resolving password change requests. As well as calling the method that would generate the new password, it should set up a response for the ticket and change the ticket status to closed.
- There should be a method to print information for all the ticket objects (Hint: research and use List<Ticket>).
- The TicketStats class should contain information on ticket statistics. Variables for storing statistics on tickets created, tickets opened and tickets closed should be encapsulated and set to a default value of 0. There should also be a method, returning a string value that displays the statistics information.
- The PasswordGenerator class should have a static method that generates a password as per the client requirements, based on the ticketNumber and staffID parameters provided. This method should be called if the user's ticket issue description contains the phrase "Password Change".
- The main class, containing the Main method:
    - Create at least one instance of each possible way of creating tickets. Include at least one ticket with the request of "Password change".
    - After the tickets are created, display ticket statistics.
    - Resolve some of the tickets, then display the ticket information and ticket statistics.
    - Reopen some of the resolved tickets, then display the ticket information and ticket statistics.

- The example output is provided below:

```
Displaying Ticket Statistics

Tickets Created: 3
Tickets Resolved: 1
Tickets To Solve: 2

Printing Tickets:

Ticket Number: 2001
Ticket Creator: Inna
Staff ID: INNAM
Email Address: inna@whitecliffe.co.nz
Description: My monitor stopped working
Response: Not Yet Provided
Ticket Status: Open

Ticket Number: 2002
Ticket Creator: Maria
Staff ID: MARIAH
Email Address: maria@whitecliffe.co.nz
Description: Request for a videocamera to conduct webinars
Response: Not Yet Provided
Ticket Status: Open

Ticket Number: 2003
Ticket Creator: John
Staff ID: JOHNS
Email Address: john@whitecliffe.co.nz
Description: Password change
Response: New password generated: JO7D332312F
Ticket Status: Closed

Displaying Ticket Statistics

Tickets Created: 3
Tickets Resolved: 2
Tickets To Solve: 1

Printing Tickets:

Ticket Number: 2001
Ticket Creator: Inna
Staff ID: INNAM
Email Address: inna@whitecliffe.co.nz
Description: My monitor stopped working
Response: The monitor has been replaced.
Ticket Status: Closed

Ticket Number: 2002
Ticket Creator: Maria
Staff ID: MARIAH
Email Address: maria@whitecliffe.co.nz
Description: Request for a videocamera to conduct webinars
Response: Not Yet Provided
Ticket Status: Open
```

Ticket Number: 2003
Ticket Creator: John
Staff ID: JOHNS
Email Address: john@whitecliffe.co.nz
Description: Password change
Response: New password generated: JO7D332312F
Ticket Status: Closed

Displaying Ticket Statistics

Tickets Created: 3
Tickets Resolved: 1
Tickets To Solve: 2

Printing Tickets:

Ticket Number: 2001
Ticket Creator: Inna
Staff ID: INNAM
Email Address: inna@whitecliffe.co.nz
Description: My monitor stopped working
Response: The monitor has been replaced.
Ticket Status: Closed

Ticket Number: 2002
Ticket Creator: Maria
Staff ID: MARIAH
Email Address: maria@whitecliffe.co.nz
Description: Request for a videocamera to conduct webinars
Response: Not Yet Provided
Ticket Status: Open

Ticket Number: 2003
Ticket Creator: John
Staff ID: JOHNS
Email Address: john@whitecliffe.co.nz
Description: Password change
Response: New password generated: JO7D332312F
Ticket Status: Reopened

PART 1. REFLECTIVE JOURNAL (LO2, LO3)

Instructions

Keep a reflective journal throughout the development process:

- Outline and reflect on the SDLC process you have followed, which stages did you go through to develop a solution matching the client's requirements?
- Reflect on the OO concepts you used on your project and note the benefit of implementing each of these concepts.

Task	Documentation required
Task 1. Reflective Journal	Reflective journal containing reflection on the development process and OO concepts.

PART 2. SOLUTION DEVELOPMENT (LO2, LO3, LO4)

Develop a solution based on the client and technical requirements presented. Follow the steps of the software development life cycle to create a robust solution. Remember to debug and test your application.

Task	Documentation required
Task 2. Solution development	Evidence of all stages of SDLC followed, including but not limited to, planning and requirements analysis, solution design, and development and testing.

SUBMISSION CHECKLIST

Task	Evidence Required	Done	Evidence Location
Task 1: Reflective Journal			
Task 1	Reflective journal containing reflection on the development process and OO concepts.		
Task 2: Solution Development			
Task 2	Evidence of all the stages of SDLC followed, including but not limited to, the planning and requirements analysis, solution design and development and testing.		

Format

- Evidence of documentation to be provided **in electronic format**, including either photos or scans of handwritten and hand drawn documents.
- **Clearly name** documents so it will be easy for lecturers to identify what task they relate to.

Submission Instructions

1. Verify that all items have been completed using the submission checklist provided above.
2. Navigate to the assessment item in iQualify (*Course Home* > *Tasks* tab > *Project*).
3. Read the declaration in iQualify.
4. Read and follow the Submission instructions.

Submissions not meeting these conditions will be returned to you for attention.