PROGRAMMING CHALLENGE 10: PRINTQUEUE

Users of a local area network each have a network account 10. The IDs have the format 2015_NNNN, where N is a digit.

Task 1
Complete the test case table with the addition of three more invalid User IDs. The reasons for their invalidity should be different.

The return value is a code as follows:
- 0 - valid User ID
- 1 - the User ID was not 9 characters
- you will use other integer numbers for other invalid cases.

Test Number	User ID	Return value	Explanation of the test case
1	2015_0987	0	Valid User ID
2			
3			
4			

Evidence 1
- The completed test case table. **[6]**

Task 2
Write program code for a function to validate a User ID. The function header has the format:

```
FUNCTION ValidateUserID (ThisUserID : STRING) RETURNS INTEGER
```

Write a program to:

- Input an ID entered by the user
- Validate the input using the function `ValidateUserID`
- Output a message describing the validity of the input.

Evidence 2
- Program code for the function `ValidateUserID` **[4]**
- **Three** screenshots showing the testing of Test Numbers 2, 3, and 4. **[3]**

You are to design an object-oriented program which simulates a print queue for a printer on a local area network (LAN). The print queue consists at any time of none, one, or more print jobs.

Each user can send a print job from any of the terminals on the LAN. Each terminal on the network is identified by an integer number in the range 1 to 172.

The program you are to design will record for each print job:
- the user ID
- the terminal number from which the print request was sent

In practice, there are several print queues each associated with a different printer. Each printer is identified by a short name, such as `Room16`.

Task 3
Design and write program code to define one or more classes and other appropriate data structures for this application.

Evidence 3
- Program code for the class(es). **[6]**

A print queue behaves as a queue data structure.

Assume, for testing purposes:

- there is a single printer on the LAN
- the maximum print queue size for the printer is five print jobs.

The main program will simulate:

- the sending of print jobs to the printer by different users
  - that is, the addition of a print job to the print queue
- the output of a job from the print queue
  - that is, the removal of a print job from the print queue

The program design has the following menu:

1. New print job added to print queue
2. Next print job output from printer
3. Current print queue displayed
4. End

The program simulates the working of the print queue as follows:
1. The empty print queue is initialised.
2. The program user selects menu options 1, 2 and 3 in any order.
3. The program user selects menu option 4.

Task 4
Write program code to:

- display the main menu
- input the choice by the user
- run the appropriate code for the choice made.

Evidence 4
- The program code. **[3]**

Task 5

Write program code to initialise the print queue for the `Room16` printer.

Write program code to display the current state of the print queue.

Evidence 5

The program code for:

- initialising the print queue
- output of the current print queue. **[6]**

Task 6

Write program code to add a new print job to the print queue.
The requirement will be:

- program user enters data for the new print job
- print job is added to the print queue.

Test the code by adding one new print job.

Evidence 6

- Program code to add a new print job.
- Screenshot following menu option 1 then menu option 3. **[4]**

Task 7

Write program code to output the next print job from the printer.
This code will execute from menu option 2.

Test the code by:

- adding three print jobs
- outputting the next print job.

Evidence 7

- Program code to output next print job.
- Screenshot following menu option 1 three times, then menu option 2, and menu option 3. **[6]**