

## Task Sheet 1 - Validation Improvements

### Introduction

This series of tasks focuses on validation i.e. ensuring that the values entered by the user are correct and that the interface of the program is user friendly.

### Task 1 - Improving card selection input

The function `GetChoiceFromUser()` is responsible for asking the user to decide whether the next card is going to be higher than the current card. The user enters either y or n as their choice.

Currently the program will not except Y, Yes, yes, N, No or no as acceptable input:

Improve the function so that all of these additional values are considered as acceptable input.

While loop for the main program at bottom of code.

### Task 2 - Improving menu choice input

The function `GetMenuChoice()` is responsible for asking the user to enter their choice from the main program menu. Only the first character of this input is required as the available choices are:

q  
1  
2  
3  
4

Currently the program will reject the user entering Q or Quit for instance. Improve this function so all of these values are recognised as being equivalent to q.

And in the while statement.

### Task 3(a) - Validating the name for a recent score

When you complete a game you will be asked to add your score to the list of most recent scores. To do this you need to enter your name - the program should work as follows:

The user is asked for their name.

If they attempt to leave the name blank they are then prompted repeatedly, until they enter something as their name.

### Questions

Answer the following questions:

Which function is responsible for getting the name from the user?

`GetPlayerName()`

How will you ensure that the user is asked for the name repeatedly?

Use a while loop, which exits when a name is entered.

What additional variable will you need and what will its datatype be?

PlayerName -> ""

REPEAT

PlayerName -> input('Please enter your name: ')

UNTIL PlayerName != ""

Write the function identified above in pseudo-code with the improvements necessary to prevent the user leaving their name blank.

```
``` python
def GetPlayerName():
    print()
    PlayerName = ""
    while PlayerName == "":
        PlayerName = input('Please enter your name: ')
    print()
    return PlayerName
```
```

Use the pseudo-code created above to help you improve the actual program code.

Task 3(b) - Deciding whether you want to add your name to the recent score table

Some users are not keen on adding their name to high score tables - they want to play the game but remain anonymous. Before being asked for their name they should be allowed to decide whether they want to add their name to the recent score table:

Questions

Answer the following questions:

Which function is responsible for adding scores to the table?

UpdateRecentScores()

Improve the function identified above so that the user has the choice of whether to add their name to the high score table or not.

Task 4 - Formatting the recent score table

Currently the formatting of the recent score table is quite poor:

It would be better if it looked like this:

Find the function responsible for generating the recent score table and improve it so that the scores are displayed in a clear tabular format.

#### Task 5 - Adding a date to the recent scores

One improvement that we can make is to record the date a high score was achieved. This will involve making changes in four functions of the program and importing an additional module.

#### Questions

Answer the following questions:

What additional module will you need to import into the program?

`from datetime import *`

Identify the four functions that will require changes.

`ResetRecentScores`

`DisplayRecentScores`

`UpdateRecentScores`

`TRecentScore`

How do you convert a string in the format DD/MM/YY (e.g. 14/08/93) to a date type in Python?

`dob = "12/12/1212"`

`date= datetime.strptime(dob,"%d/%m/%Y")`

Make the necessary changes to the program so that the date can be stored along with the rest of the of the recent score details. Ensure that when the score is displayed that it is in the format DD/MM/YY.

#### Additional Task - Variable roles

Section B of the COMP1 exam focuses on your understanding of the program source code. Often the questions will focus on the role of variables in the program. There are several different roles that a variable can have: they are described on page 66 of the AS textbook.

#### Questions

Answer the following questions:

Describe each variable role in your own words.

| Role        | Description                                      | Example |
|-------------|--|---------|
| Fixed Value | A variable thats value doesn't change for a loop | Rank    |

| Role               | Description   | Example            |
|--------------------|---|--------------------|
| Stepper            | Used to move through a list, generally a counter.                         | NoOfSwapsMadeSoFar |
| Most recent holder | Last thing entered by the user or a the last value being read from a list | PlayerName         |
| Most wanted holder | Keeps track of the lowest or highest value in a set of inputs             |                    |
| Gatherer           | Accumulates or tallies up set of data and inputs                          | Score              |
| Transformation     | Stores the result of a calculation involving more than one variable       |                    |
| Follower           | Keeps check of a previous value of a variable,                            |                    |
| Temporary          | Used for storing data for a short period of time                          | name_on_table      |

Give an example of variable from the program code for each variable role.

#### Additional Task - Functions and parameters

When binding arguments to parameters they are passed into the function either by value or by reference. In some programming languages you can specify which method to use but in Python this is done automatically for you. Some values are passed by value and others by reference - it depends on the value's data type.

#### Data Type Passing Mechanism

Integer by value

Float by value

String by value

Boolean by value

List by reference

Record by reference

The AS textbook has a good section on passing by value and passing by reference on pages 63 to 65.

#### Questions

Answer the following questions:

Describe the difference between passing by value and passing by reference in your own

words.

Passing by reference - the called functions' parameter (variable name not value) will be the same as the callers' passed argument .

Pass by value -the called functions' parameter will be a copy of the callers' passed argument. (The name is different but value is the same)

For each function in the program identify the mechanism using to pass each parameter.

Note: this task will take a while but it will improve your understanding of the program and by useful for the exam.

| Function                   | Mechanism       |
|----------------------------|-----------------|
| GetRank                    | Value           |
| GetSuit                    | Value           |
| LoadDeck                   | Reference       |
| ShuffleDeck                | Reference       |
| DisplayCard                | Reference       |
| GetCard                    | Reference,Value |
| IsNextCardHigher           |                 |
| GetPlayerName              | Value           |
| GetChoiceFromUser          | Value           |
| DisplayEndOfGameMessage    | Value           |
| DisplayCorrectGuessMessage | Value           |
| ResetRecentScores          | Reference       |
| DisplayRecentScores        | Reference       |
| UpdateRecentScores         | Reference,Value |
| PlayGame                   | Reference,Value |

Next

This task sheet has focused on validation, the next set of tasks will involve making improvements to the actual game.