Program Design: Lab Work Week 4

Problem 1 (6 marks)

Create a flowchart to represent the logic for the following problem. An application is required to calculate the average of 100 exam grades. The user will enter the exam grades one at a time, and will finish when all 100 grades have been entered. The program must calculate the average of all the grades entered and then display the result.

You must provide the following for the above problem:

- Logical steps to solve the problem (3 marks)
- Flowchart (3 marks)

Problem 2 (7 marks)

Create a flowchart to represent the logic of a guessing game. The computer will randomly generate a number between 1 and 50. The user must enter their name then their first guess at the number. The player is only allowed 5 guesses. If they guess correctly they will get a message of congratulations. If they don't guess correctly within 5 goes the game is over, then tell the player and ask them if they wish to play again.

You must provide the following for the above problem:

- Logical steps to solve the problem (1 mark)
- Flowchart (4 marks)
- Scratch program implementing the logic of the flowchart (2 marks)

Problem 3 (7 marks)

Create a flowchart to represent the logic of a maths multiplication game. The computer will randomly generate 2 number between 1 and 50 and display the sum to the user. The user must enter the correct answer to the sum. The player is only allowed 3 lives. The players score must be kept, ie. How many correct answers they got before the game ended. The score should be displayed at the end of the game.

You must provide the following for the above problem:

- Logical steps to solve the problem (1 mark)
- Flowchart (4 marks)
- Scratch program implementing the logic of the flowchart (2 marks)

Marking Scheme:

Part 1 (6 marks):
Marks will be deducted for incorrect logic, mistakes on diagrams, missing source files and for no attempts.

Part 2 (7 marks):
Marks will be deducted for incorrect logic, mistakes on diagrams, incomplete implementation in Scratch, missing source files and for no attempts.

Part 3 (7 marks)
Marks will be deducted for incorrect logic, mistakes on diagrams, incomplete implementation in Scratch, missing source files and for no attempts.