Fit for Purpose

Once a program has been analysed, designed, implemented and tested it is important to evaluate the program to ensure it is fit for purpose.

Evaluating allows us to ensure the program does the job it was designed to do and think about any improvements that could be made.

When evaluating a program we should ensure that the program:
- Is it a completed solution (fully solves the problem). Revisit the Analysis stage andthe problem statement
- Meets the design/specification given

Example Answer

Fitness for purpose **(1 mark)**

My program is fit for purpose as it carries out all the requirements of the task.
My program successfully:
- Allows the user to input hits for 6 players. This was achieved by using a fixed loop.
- Stores the values for these in an array
- Validates the input between 0 and 30 using a conditional loop
- Keeps a running total of the combined hits for all 6 players
- Calculates the average
- Accurately displays how many points they have received - 1 point for total hits over 50 and an additional point for average over or equal to 10.
- I have thoroughly tested my program using Normal, Extreme and Exceptional results and it produces accurate results.

Efficiency of code

Removing unnecessary code, arriving at the final output in the quickest way and use of the correct variables, data types and programming concepts allows for an efficient program.

It is important to consider the following when creating code:

- Has the programmer used repetition (loops) where possible to reduce the amount of code?
- Has the programmer used arrays where possible instead of declaring many individual variables?
- Has the programmer used selection statements that will only make comparisons until a solution is reached? e.g. Nested ifs instead of separate statements

Tips to answer correctly

Efficiency of your program code   **(1 mark)**
Evaluation of efficiency of constructs within the candidates own code may include:

efficiency of use of
- an array instead of separate variables to store words
- loops to reduce code
- nested if statements preventing unnecessary code execution

inefficiency: discussion of own code if it varies from the supplied design

Readability of code

It is important for programs to be written in a readable fashion so that they can be easily understood. Imagine if you (or someone else) wanted to make changes to a program that you wrote a year ago or more. If you didn't take care to make sure that it could be easily understood then it will probably take a long time to make the changes.

Some methods of making a program readable are:

- Use meaningful identifiers - variable names

- Use internal commentary

- Use structured listings (indentation, capitalisation)

- Use plenty of white space

Example Answer

> **Readability of your code (2 marks)**
> My code is readable as I have used good programming techniques.
> I have used:
> - Meaningful variable names
> - Good use of white space. Python uses indentation by default but this also helps readability.
> - Internal commentary throughout to explain the main parts of my code. This could help with maintenance in the future.

Robustness of code

A program is robust if it has the ability to cope with errors or incorrect input for the user without the program crashing.

For example, a program has been developed to ask the user to input their age as an integer. However, a user accidentally types their age in as a string. If the program was to crash then it would not be a robust program.

To evaluate robustness, programs should be tested using Normal, Extreme and Exceptional test data.

Example Answer

> **Robustness of your completed program (1 mark)**
>
> I have tested my program using Normal, Extreme and Exceptional data and it coped well with unexpected inputs.
>
> Extreme test data 0 and 30 was accepted as valid.
>
> Exceptional test data.
> - -10 was input and the user was prompted to re-enter as it was invalid.
> - 45 was entered and they were asked to re- enter.
> - I tried to input 'A' and my program crashed, this was expected though as validating a character is out with the scope for National 5.