Explain Functions and Their Benefits?

Definition

Functions are an essential component of programming languages and play a crucial role in solving problems efficiently. Functions enable programmers to break down a complex problem into smaller, more manageable parts, making the code easier to understand and maintain.

Benefits

1) Reusability

By defining a function, you can reuse the same set of code multiple times without duplicating it, promoting code reusability and making the program more efficient.

2) Modularity

Functions promote modularity, allowing different parts of a program to be developed and tested independently. This helps in collaborative coding and makes it easier to debug and maintain the codebase.

3) Enhanced Quality

Functions also make the code more readable and organized, enhancing its overall quality.

4) Improved Efficiency

Using functions in programming leads to more organized, maintainable, and efficient code.

Function Implementation (Python Example)

```
def perimeter (length, breadth):
    """Calculates and returns the perimeter of a rectangle."""
    p = 2*(length + breadth)
    return p
length = int(input (“Enter length of a rectangle : ”))
breadth = int(input (“Enter breadth of a rectangle : ”))
result = perimeter (length, breadth)
print ("The perimeter of the rectangle is : ", result)
```

Explanation:

- The ***def*** keyword starts the function definition.
- ***perimeter*** is representing function name.
- ***length & breadth*** are the function arguments.
- **return p**: returns the calculated perimeter of rectangle.

Assessment Questions

1) Which of the following describes what a function does in programming?

A. Stores a single value

B. Performs a set of calculations or actions

C. Makes a decision in the code

D. Repeats a section of code

2) Consider this code snippet:

```
def solve(x, y):
    result = x ** y
    return result
```

What is the output when you call *solve*(2, 3)?

A. 2

B. 8

C. 9

D. None of the above

Solutions

1) B

2) B