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MWIMA MABLE M24D14/010

TRUE/FALSE

1. False. The best practice is to plan and design your program first, then write and debug the code.
2. True. An algorithm can be written in plain language, pseudocode, or flowcharts without using a programming language.
3. False. Programs often need modifications, updates, and maintenance even after they are initially written and debugged.
4. True. Python identifiers must start with a letter (a-z, A-Z) or an underscore (\_).
5. False. Keywords are reserved words in Python and should not be used as variable names.
6. True. Expressions are indeed built from literals, variables, and operators.
7. True. In Python, x = x + 1 is a legal statement used to increment the value of x.
8. False. Python allows the input of multiple values with a single statement using functions like input (). split ().
9. True. A counted loop is designed to iterate a specific number of times, often implemented using the for loop.
10. False. In a flowchart, diamonds are used for decision points, and rectangles are used to show statements or processes.

MULTIPLE CHOICE

1. c) Fee setting
2. a) F = 9/5(C) + 32
3. d) specification
4. c) 2spam
5. b) statements
6. b) expressions
7. b) Program
8. d) a counted loop
9. a) sticky-note
10. d) input

DISCUSSION

**1. Six Steps in the Software Development Process**

1. **Specification**: This step involves defining what the program will do. It includes outlining the problem the program will solve, the required features, and the expected behaviour.
2. **Design**: In this step, the overall structure and architecture of the program are planned. This includes creating algorithms, flowcharts, and deciding how different components of the program will interact.
3. **Implementation**: This is where the actual coding happens. The design is translated into a programming language, and the program is written.
4. **Testing/Debugging**: After implementation, the program is tested to find and fix any errors or bugs. This ensures the program works as expected and meets the specifications.
5. **Documentation**: Writing documentation involves creating guides, manuals, and comments in the code to help others understand how to use and maintain the program.
6. **Maintenance**: This step involves updating and modifying the program as needed after it is released. This can include fixing bugs, adding new features, and improving performance.

**2. chaos. Py program**

Here’s a simple example of a chaos program. Unfortunately, I can't visually circle and underline elements, but I can indicate them for you:

python

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# chaos.py

def main (): # Function definition (identifier: main)

print ("This program illustrates a chaotic function”) # Output statement

x = float (input ("Enter a number between 0 and 1: ")) # Assignment and input statement

for i in range (10): # Loop statement (identifier: i)

x = 3.9 \* x \* (1 - x) # Assignment and expression

print(x) # Output statement

main () # Function call (identifier: main)

**3. Relationship Among Definite Loop, For Loop, and Counted Loop**

* **Definite Loop**: A loop that executes a known number of times. It is definite because the number of iterations is determined before the loop starts.
* **For Loop**: A specific type of definite loop used in many programming languages, including Python. It iterates over a sequence (like a list, range, or string) a fixed number of times.
* **Counted Loop**: A type of definite loop where the number of iterations is counted, often using a loop variable. In Python, a for loop over a range is a common example of a counted loop.

**4. Output from the Fragments**

(a)

python

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for i in range (5):

print (i \* i)

Output:

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0

1

4

9

16

(b)

python

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for d in [3, 1, 4, 1, 5]:

print (d, end=" ")

Output:

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3 1 4 1 5

(c)

python

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for i in range (4):

print("Hello")

Output:

Copy

Hello

Hello

Hello

Hello

(d)

python

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for i in range (5):

print (i, 2\*\*i)

Output:

Copy

0 1

1 2

2 4

3 8

4 16

**5. Pseudocode Before Python Code**

Writing out an algorithm in pseudocode first helps clarify the logic and structure without getting bogged down by syntax. It allows for easier troubleshooting and ensures the plan is sound before coding. It acts as a blueprint, making implementation smoother and less error-prone.

**6. sep Parameter in print**

The sep parameter in the print function specifies the separator between multiple values. For example:

python

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print ("Hello", "World", sep="-")

Output:

Copy

Hello-World

**7. Output of the Given Code**

python

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print("start")

for i in range (0):

print("Hello")

print("end")

Prediction: The for loop has a range of 0, so it will not execute any iterations. The output will be:

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start

end