1. How many times will the following loop run?

```
i = 0
while i < 10 :
   print(i)
   i = i + 1
```

A. 0
B. 8
C. 9
D. 10

Section	4.1 The while loop
Title	How many iterations of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-02

2. How many times does the code snippet given below display "Loop Execution"?

```
i = 1
while i != 10 :
   print("Loop Execution")
   i = i + 1
```

A. Infinite times
B. 8 times
C. 9 times
D. 10 times

Section	4.1 The while Loop
Title	How many iterations of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-04

3. What is the output of the following code snippet?

```
i = 1
while i < 10 :
  print(i, end =  " ")
  i = i + 2
  if i == 5 :
     i = 9
```

A. 1 3 5
B. 1 3 9
C. 1 3 5 7 9
D. 1 3 5 9

Section	4.1 The while Loop
Title	What does this while loop print?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-06

4. What is the output of the code fragment given below?

```
i = 0
j = 0
while i  < 125 :
   i = i + 2
   j = j + 1
print(j)
```

A. 0
B. 62
C. 63
D. The code fragment displays no output because it does not compile.

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-09

5. What is the output of the following loop?

```
s  = 1
n  = 1
while  s < 10 * n :
   s = s + n
   n = n + 1
print(s)
```

A. 211
B. 210
C. 120
D. 123

Section	4.1 The while Loop
Title	What is the output of the following while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-10

6. What will be the result of running the following code fragment?

```
year = 0
rate = 5
principal = 10000
interest = 0
while year < 10 :
   interest = (principal * year * rate) / 100
   print("Interest ", interest)
```

A. The code fragment will display the interest calculated for nine years.
B. The code fragment will continue to display the calculated interest forever because the loop will never end.
C. The code fragment will not display the calculated interest and halt abruptly.
D. The code fragment will not display any output because it will not compile.

Section	4.1 The while Loop
Title	What is result of while loop?

type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-11

7. Which of the following code snippets displays the output exactly 10 times?

A.
```
i = 0
while i <= 10 :
   print("This is example 1.")
   i = i + 1
```

B.
```
i = 0
while i < 10 :
   print("This is example 2.")
   i = i + 1
```

C.
```
i = 0
while i < 10 :
   print("This is example 3.")
```

D.
```
i = 1
while i < 10 :
   print("This is example 4.")
   i = i + 1
```

Section	4.1 The while Loop
Title	Which while loop executes 10 times?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-12

8. What is the output of the following code snippet?

```
i = 1
while i != 9 :
   print(i , end = " ")
   i = i + 1
   if i == 9 :
      print("End")
```

A. 1 End
B. 1 End (infinite loop)
C. 1 2 3 4 5 6 7 8 End
D. 1 2 3 4 5 6 7 8 End (infinite loop)

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-13

9. How many times is the text "Let's have fun with Python." printed when this code snippet is run?

```
i = 0
while i <= 10 :
   print("Let's have fun with Python.")
   i = i + 1
```

```
if i % 2 == 0 :
   i = 10
```

A. 1
B. 2
C. 3
D. 10

Section	4.1 The while Loop
Title	How many times does do loop with nested if execute?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-15

10. Select the statement that correctly completes the loop in this code snippet.

```
years = 20
rate = 0.05
balance =  10000
while years  > 0 :
    #  Place code here
   interest = balance * rate / 100
   balance = balance + interest
```

A.
```
years = years + 1
```

B.
```
years = years - 1
```

C.
```
balance = balance + 1
```

D.
```
balance = balance - 1
```

Section	4.1 The while Loop
Title	Insert appropriate code in while loop
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-16

11. Is the following code snippet legal?

```
b = False
while b != b :
   print("Do you think in Python?")
```

A. Yes, it is legal but does not print anything.
B. Yes, it is legal and prints "Do you think in Python?" once.
C. Yes, it is legal and prints "Do you think in Python?" twice.
D. No, it is not legal and gives a compilation error.

Section	4.1 The while Loop
Title	While loops with Boolean conditions
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-17

12. What is the output of the following code snippet?

```
i = 1
while i  < 20 :
   print(i , " ")
   i = i + 2
   if i == 15 :
      i = 19
```

A. 1 3 5 7 9 11 13 15 17 19
B. 1 3 5 7 9 11 13 19
C. 1 3 5 7 9 11 13 15 17
D. 1 3 5 7 9 11 13 17 19

Section	4.1 The while Loop
Title	What is output of while loop with nested if?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-18

13. What are the values of i and j after the following code snippet is run?

```
i = 10
j = 20
count = 0
while count < 5 :
   i = i + i
   i = i + 1
   j = j - 1
   j = j - j
   count = count + 1
print("i = ", i , ", j = ", j)
```

A. i = 45, j = 1
B. i = 351, j = 0
C. i = 351, j = 2
D. i = 1311, j = 35

Section	4.1 The while Loop
Title	What are values of i and j after while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-19

14. How many times does the following code fragment display "Hi"?

```
i = 10
while i >= 0 :
  print("Hi")
  i = i -  1
```

A. 9 times
B. 10 times
C. 11 times
D. 12 times

Section	4.1 The while Loop
Title	How many times does while loop execute?
type	mc
section	4.1 The while Loop

id	testbank-py-1-ch04-24

15. What is the output of the code snippet given below?

```
n = 0
while n * n < 100 :
   print(n * n,  end =  "  ")
   n = n + 1
```

A. 0 1 4 9 16 25 36 49 64 81
B. 0 1 2 3 4 5 6 7 ... 99 100
C. 0 1 1 2 3 5 8 13 21 34 55 89
D. 0 0 0 0 0 0 (infinite loop)

Section	4.1 The while Loop
Title	What is output of this while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-26

16. What is the output of the code snippet given below?

```
s = "abcde"
length = len(s)
i = 1
while i < length :
   print(s[i])
   i = i + 1
```

A. No output
B. abcd
C. abcde
D. bcde

Section	4.1 The while Loop
Title	What is the output of while loop with the slice operator?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-29

17. What is the output of the code snippet given below?

```
s = "abcde"
i = 1
while i < 5 :
   if i > 1 :
      print(s[i])
```

A. No output
B. No output (infinite loop)
C. abcde
D. bcde

Section	4.1 The while Loop
Title	What is output of while loop with nested if?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-30

18. What is the output of the code snippet given below?

```
s = "12345"
i = 0
while i < 5 :
   print(s[i])
   i = i + 1
```

A. No output
B. 1234
C. 12345
D. 2345

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-32

19. What is the output of the code snippet given below?

```
s = "12345"
i = 1
while i < 5 :
   if i > 1 :
      print(s[i])
```

A. No output
B. No output (infinite loop)
C. 12345
D. 2345

Section	4.1 The while Loop
Title	What is output of while loop with nested if?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-33

20. How many times does the code snippet below display "Hello"?

```
i = 0
while i != 15 :
   print("Hello")
   i = i + 1
```

A. Infinite times
B. 14 times
C. 15 times
D. 16 times

Section	4.1 The while Loop
Title	How many times does while loop display result?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-34

21. How many times does the following loop run?

```
i = 0
j = 1
while j >= 1 :
   print(i , ";" , j)
   i = i + 1
   if i % 3 == 0 :
      j = j -  1
```

A. 1 time
B. 2 times
C. 3 times
D. 4 times

Section	4.1 The while Loop
Title	How many times does this loop with a nested if run?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-36

22. What is the output of the following code snippet?

```
i = 1
while i <= 10 :
   print("Inside the while loop")
   i = i + 10
```

A. No output because of compilation error.
B. "Inside the while loop" will be displayed 10 times.
C. No output after successful compilation.
D. "Inside the while loop" will be displayed only once.

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-38

23. How many copies of the letter `A` are printed by the following loop?

```
i = 0
while i < 5 :
   print("A")
   i = i + 1
```

A. 0
B. 4
C. 5
D. Infinity

Section	4.1 The while Loop
Title	How many copies of the letter A are printed by the following loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-39

24. How many copies of the letter `B` are printed by the following loop?

```
i = 0
```

```
while i == 5 :
   print("B")
   i = i + 1
```

A. 0
B. 4
C. 5
D. Infinity

Section	4.1 The while Loop
Title	How many copes of the letter B are printed by the following loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-40

25. How many copies of the letter `C` are printed by the following loop?

```
i = 0
while i < 5 :
   print("C")
   i = i - 1
```

A. 0
B. 4
C. 5
D. Infinity

Section	4.1 The while Loop
Title	How many copies of the letter C are printed by the following loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-41

26. What is the value of `i` at the end of the following code segment?

```
i = 1
while i < 32 :
   i = i * 2
```

A. 16
B. 31
C. 32
D. 64

Section	4.1 The while Loop
Title	What is the value of i at the end of this loop?
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-42

27. The following while loop should continue to run as long as the user does **not** enter a negative number. What condition should be used to achieve this behavior?

```
x = int(input("Enter an integer: "))
while _____________ :
   x = int(input("Enter an integer: "))
```

A. `x != 0`

B. `x == 0`
C. `x <= 0`
D. `x >= 0`

Section	4.1 The while Loop
Title	Fill in the correct condition for a while loop
type	mc
section	4.1 The while Loop
id	testbank-py-1-ch04-43

28. What term is used to describe a loop where the number of times that the loop will execute is known before the body of the loop executes for the first time?
A. Definite
B. Fiscal
C. Indefinite
D. Infinite

Section	4.1 The while Loop
Title	What term is used to describe a loop where the number of times that the loop will execute is known before the body of the loop executes for the first time?
type	mc
section	4.1 The while Loop
id	testbank-py-2-ch04-148

29. Which of the following changes will make the following code snippet display `Let us learn Python` exactly 10 times?

```
i = 0
while i <= 10 :
   print("Let us learn Python")
   i = i + 1
```

A. Replace `while i <= 10` with `while i < 9`
B. Replace `while i <= 10` with `while i < 11`
C. Replace `while i <= 10` with `while i < 12`
D. Replace `i = 0` with `i = 1`

Section	4.1 The while Loop
Title	What changes needed so while loop executes 10 times?
type	mc
from	testbank-py-1-ch04-14
section	4.1 The while Loop
id	testbank-py-2-ch04-14

30. Which statement corrects the off-by-one error in the following code:

```
# This code prints the first 10 numbers starting with zero
i = 0
while i <= 10 :
   print(i)
   i = i + 1
```

A. Replace `i = 0` with `i = 1`
B. Replace `while i <= 10` with `while i < 10`
C. Replace `i = i + 1` with `i = i + 2`
D. Replace `while i <= 10` with `while i + 1< 10`

Section	4.1 The while loop

Title	How do you fix an off-by-one error?
type	mc
from	testbank-py-1-ch04-01
section	4.1 The while Loop
id	testbank-py-2-ch04-01

31. What is the output of the following code fragment?

```
i = 1
sum = 0
while i <= 15 :
   sum = sum + i
   i = i + 1
print("The value of sum is", sum)
```

A. The value of sum is 0
B. The value of sum is 105
C. The value of sum is 120
D. The value of sum is 136

Section	4.1 The while Loop
Title	What is the output of while loop that sums?
type	mc
from	testbank-py-1-ch04-20
section	4.1 The while Loop
id	testbank-py-2-ch04-20

32. What are the values of `i` and `j` after the following code fragment runs?

```
i = 60
j = 50
count = 0
while count < 5 :
  i = i + i
  i = i + 1
  j = j - 1
  j = j - j
  count = count + 1
  print("i =",  i, ", j =", j)
```

A. `i = 1951, j = 0`
B. `i = 1951, j = 45`
C. `i = 65, j = 1`
D. `i = 65, j = 45`

Section	4.1 The while Loop
Title	What are values of variables after while loop executes?
type	mc
from	testbank-py-1-ch04-21
section	4.1 The while Loop
id	testbank-py-2-ch04-21

33. Which type of error could be reported by Python when the program contains an "off-by-one" error?
A. Syntax error
B. Compile-time error
C. Run-time error
D. Infinite loop error

Section	4.1 The while Loop

Title	What type of error is an off-by-one error?
type	mc
from	testbank-py-1-ch04-22
section	4.1 The while Loop
id	testbank-py-2-ch04-22

34. What is the output of the code snippet given below?

```
i = 0
while i !=  11 :
   print(i, end=" ")
   i = i + 3
```

A. 0 3 6 9 12
B. 0 3 6 9 12 15 18
C. 0 1 3 5 7 9
D. 0 3 6 9 12 ... (infinite loop)

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
from	testbank-py-1-ch04-23
section	4.1 The while Loop
id	testbank-py-2-ch04-23

35. What is the output of the following code fragment?

```
i = 1
sum = 0
while i <= 11 :
   sum = sum + i
   i = i + 1
print("The value of sum is", sum)
```

A. The value of sum is 65
B. The value of sum is 66
C. The value of sum is 55
D. The value of sum is 56

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
from	testbank-py-1-ch04-25
section	4.1 The while Loop
id	testbank-py-2-ch04-25

36. What is the last line of output produced by the code snippet below?

```
i = 0
total = 0
while total < 0 :
   i = i + 1
   total = total - i
   print(i, total)
```

A. 0 0
B. 1 1
C. No output

D. 0 -1

Section	4.1 The while Loop
Title	What does this code snippet produce?
type	mc
from	testbank-py-1-ch04-27
section	4.1 The while Loop
id	testbank-py-2-ch04-27

37. How many times does the following loop run?

```
i = 0
j = 1
while j >= 1 :
   print("" , i , ";" , j)
   i = j + 1
   if i % 2 == 0 :
      j = j - 1
```

A. 0 times
B. 1 time
C. 2 times
D. 4 times

Section	4.1 The while Loop
Title	How many times does do loop with nested if execute?
type	mc
from	testbank-py-1-ch04-28
section	4.1 The while Loop
id	testbank-py-2-ch04-28

38. What is the output of the code snippet given below?

```
s = "abcde"
j = len(s) - 1
while j >= 0 :
   print(s[j])
   j = j -  1
```

A. abcd
B. bcde
C. bcbcd
D. edcba

Section	4.1 The while Loop
Title	What is output of the while loop?
type	mc
from	testbank-py-1-ch04-31
section	4.1 The while Loop
id	testbank-py-2-ch04-31

39. What is the output of the code snippet given below?

```
i = 0
while i != 11 :
   print(" ", i)
   i = i + 2
```

A. No output

B. 0 2 4 6 8
C. 10 12 14 16 18 ... (infinite loop)
D. 0 2 4 6 8 ... (infinite loop)

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
from	testbank-py-1-ch04-35
section	4.1 The while Loop
id	testbank-py-2-ch04-35

40. What will be the output of the following code snippet?

```
token = False
while token :
   print("Hello")
```

A. "Hello" will continue to be displayed until the user stops the program.
B. No output because of compilation error.
C. No output after successful compilation.
D. "Hello" will be displayed only once.

Section	4.1 The while loop
Title	What is output of while loop with Boolean condition?
type	mc
from	testbank-py-1-ch04-37
section	4.1 The while Loop
id	testbank-py-2-ch04-37

41. What is the output of the code snippet given below?

```
i = 0
while i != 9 :
   print(i, end = " ")
   i = i + 2
```

A. No output
B. 0 2 4 6 8
C. 10 12 14 16 18 ... (infinite loop)
D. 0 2 4 6 8 10 12 14 ... (infinite loop)

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
from	testbank-py-1-ch04-03
section	4.1 The while Loop
id	testbank-py-2-ch04-03

42. What is the output of the code fragment given below?

```
i = 0
j = 0
while i < 27 :
   i = i + 2
   j = j + 1
print("j =",  j)
```

A. `j = 27`

B. `j = 12`
C. `j = 13`
D. `j = 14`

Section	4.1 The while Loop
Title	What is output of while loop?
type	mc
from	testbank-py-1-ch04-05
section	4.1 The while Loop
id	testbank-py-2-ch04-05

43. The code snippet below is supposed to check whether an integer greater than 1 is a prime number. What will be the result of executing it?

```
j = 2
result = 0
number = int(input("Please enter an integer (2 or greater):"))
while j < number :
   if number % j  == 0 :
      result = 1
   j = j + 1
if result == 1 :
   print("Number:", number, "is Not Prime.")
else :
   print("Number:", number, "is Prime.")
```

A. The code snippet contains a compile error.
B. The code snippet displays the desired result.
C. The code snippet displays an incorrect result.
D. The code snippet causes an infinite loop.

Section	4.1 The while Loop
Title	Will the while loop with if/else produce desired result?
type	mc
from	testbank-py-1-ch04-07
section	4.1 The while Loop
id	testbank-py-2-ch04-07

44. What is the output of the following code snippet?

```
a = 2
n = 16
r = 1
b = a
i = n
while i > 0 :
   if i % 2 == 0 : # n is even
      b = b * b
      i = i / 2
   else :
      r = r * b
      i = i -  1
print("r =", r)
```

A. r = 16
B. r = 128
C. r = 4096
D. r = 65536

Section	4.1 The while Loop
Title	What is the output of while loop with nested if?
type	mc
from	testbank-py-1-ch04-08
section	4.1 The while Loop
id	testbank-py-2-ch04-08

45. What are the final values of the variables `i`, `j`, and `n` at the end of this loop?

```
i = 0
j = 12
n = 0
while i != j :
   i = i + 2
   j = j - 2
   n = n + 1
```

A. 2 10 1
B. 4 8 2
C. 6 6 3
D. 0 12 0

Section	4.2: Problem Solving: Hand-Tracing
Title	What are final values of three variables in a for loop?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-44

46. When hand-tracing the loop in the code snippet below, which variables are important to evaluate?

```
i  = 10
j  = 5
k  = -10
sum  = 0
while  i > 0 :
   sum = sum + i + j
   i = i -  1
   print("Iteration: ", i)
```

A. The variables `i` and `j`
B. The variables `i` and `sum`
C. The variables `i, j,` and `k`
D. The variables `j` and `k`

Section	4.2 Problem solving: hand-tracing
Title	Which variables are important to monitor when hand-tracing a code snippet?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-45

47. When hand tracing, drawing a line through the value stored in a variable means that
A. The value stored there has changed to something new
B. The variable is the wrong data type for the code being executed
C. The expression being evaluated uses that variable
D. The variable must be inside a loop

Section	4.2 Problem solving: hand-tracing
Title	What does it mean to draw a line through values when hand-tracing?
type	mc

section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-46

48. When hand-tracing a portion of code, which statement about Boolean conditions is true?
    A. They typically are too complex to be evaluated.
    B. They do not need to be monitored because their result usually is not stored in a variable.
    C. It is rare to encounter a Boolean condition.
    D. They are crucial to evaluate since they determine if-statement conditions and looping.

Section	4.2 Problem solving: hand-tracing
Title	Which statement about Boolean conditions is true?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-47

49. What is the output of this code snippet?

```
s = 1
n = 1
while s  < 3 * n :
   s = s + n
   print(s , end = " ")
   n = n + 1
```

    A. 2 4 7 11 16 22
    B. 1 3 5 7 9
    C. 2 3 5 6 7
    D. 2 4 6 8

Section	4.2 Problem Solving: Hand-Tracing
Title	What is output of do-while loop?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-48

50. What are the values of `i` and `j` after the following code snippet executes?

```
i  = 20
j  = 70
count  = 0
while  count < 5 :
   i = i + i
   i = i + 1
   j = j - 1
   j = j - j
   count = count + 1
print(i)
print(j)
```

    A. i = 25, j = 1
    B. i = 25, j = 65
    C. i = 671, j = 0
    D. i = 671, j = 65

Section	4.2 Problem Solving: Hand-Tracing
Title	What are values of variables after while loop executes?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-49

51. The process of hand-tracing code is valuable because

A. It is usually faster than just running the code.
B. It is the best way to design an algorithm.
C. You must already have a working program in order to do it.
D. It gives valuable insight that you do not get by running the code.

Section	4.2 Problem Solving: Hand-Tracing
Title	Why is hand tracing valuable?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-50

52. What is the output of the code snippet given below?

```
s = "aeiou"
i = 0
while i < 5 :
   print(s[i], s[i + 1], end = " ")
   i = i + 1
   if i >= 3 :
      i = 5
```

A. a
B. a e
C. a e i o u
D. a e e i i o

Section	4.2 Problem Solving: Hand-Tracing
Title	What is output of the loop with nested if?
type	mc
section	4.2 Problem Solving: Hand-Tracing
id	testbank-py-1-ch04-51

53. What is the sentinel value in the following code segment?

```
value = 15
x = int(input("Enter an integer: "))
while x != 0 :
   value = value * 2
   print(value + 3)
   x = int(input("Enter an integer: "))
```

A. 0
B. 2
C. 3
D. 15

Section	4.3 Application: Processing Sentinel Values
Title	What is the sentinel value in the following code segment?
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-1-ch04-52

54. Of the following options, what should the user enter to cause the following while loop to terminate?

```
done = False
while not done :
   x = float(input("Enter a number: "))
```

```
if x > 5.0 :
   print(x)
elif x > 0.0 :
   done = False
elif x < -5.0 :
   print(-x)
else :
   done = True
```

A. -7.5
B. -2.5
C. 2.5
D. 7.5

Section	4.3 Application: Processing Sentinel Values
Title	What value will cause the while loop to terminate?
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-1-ch04-53

55. Which of the following statements is correct about a sentinel?

A. A sentinel is a value that creates a bridge between a data set and unrelated input.
B. A sentinel is a value that is part of the data to be processed by the program.
C. A sentinel is a value that terminates a program.
D. A sentinel is a value that indicates the end of an input sequence.

Section	4.3 Application: Processing Sentinel Values
Title	Which statement about sentinels is correct?
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-1-ch04-55

56. What will be the output of the following code snippet?

```
token1 = True
while token1 :
  for i in range(0,10) :
     print("Hello")
  token1 = False
```

A. No output.
B. Hello will be displayed 10 times.
C. Hello will be displayed 9 times.
D. Hello will be displayed infinite times.

Section	4.3 Application: Processing Sentinel Values
Title	What is output of while loop with Boolean condition?
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-1-ch04-57

57. Insert a statement that will correctly terminate this loop when the end of input is reached.

```
done = False
while done != True :
   x = input("Enter a value")
   if x == "Q" :
      _________________
```

A.
```
stop
```

B.
```
done = 1
```

C.
```
exit
```

D.
```
done = True
```

Section	4.3 Application: Processing Sentinel Values
Title	Insert code to terminate a loop
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-1-ch04-60

58. Which of the following loops executes exactly 10 times?

A.
```
for i in range(1, 11) :
   i =  1
```

B.
```
found = False
while i < 10 and found != True :
   i = i + 1
   if i % 10 == 0 :
      found = True
```

C.
```
i =  0
while i <= 10 :
   i = i + 1
```

D.
```
i = 0
for i in range (1, 10)  :
   print(i)
```

Section	4.3 Application: Processing Sentinel Values
Title	Which of the following loops executes exactly 10 times?
type	mc
from	testbank-py-1-ch04-130
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-130

59. When will the loop in the following code snippet stop?

```
sum = 0
count = 1
str = input("Enter values, Q to quit: ")
while count < 100 and str != "Q" :
   value = float(str)
   sum = sum + value
   count = count + 1
   str = input("Enter values, Q to quit: ")
```

I. When the user enters an integer

II. When the user enters the character Q

III. After the user enters 100 numbers

A. I or II
B. II only
C. III only
D. II or III

Section	4.3 Application: Processing Sentinel Values
Title	When does do loop with sentinel stop?
type	mc
from	testbank-py-1-ch04-133
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-133

60. The value that denotes the end of an input sequence is known as a:
A. Sedimentary value
B. Sentimental value
C. Sentinel value
D. Sequential value

Section	4.3 Application: Processing Sentinel Values
Title	The value that denotes the end of an input sequence is known as a(n):
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-149

61. Which of the following command lines starts the python program `sum.py` so that it will read its input from `values.txt` instead of the keyboard?
A. `python sum.py < values.txt`
B. `python sum.py > values.txt`
C. `python values.txt < sum.py`
D. `python values.txt > sum.py`

Section	4.3 Application: Processing Sentinel Values
Title	Which command line uses input redirection correctly?
type	mc
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-150

62. What happens when the following loop is executed?

```
val1 = True
val2 = False
while val1 :
   if val1 :
      print("Hello")
   val1 = val2
```

A. No output will be displayed because of a compilation error.
B. "Hello" will be displayed only once.
C. "Hello" will be displayed an infinite number of times.
D. No output will be displayed even after successful compilation of the code snippet.

Section	4.3 Application: Processing Sentinel Values
Title	What is output of while loop with nested if and Boolean conditions?
type	mc
from	testbank-py-1-ch04-54
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-54

63. Which statement is correct about the execution of the loop in the following code fragment?

```
num = int(input("Please enter a number (0 when done): "))
incr = 0
while num != 0 :
   incr = incr + 1
   num = int(input("Please enter a number (0 when done): "))
print(incr)
```

A. The loop will execute only when 0 is entered.
B. The execution of the loop is independent of user input.
C. The program prints the count of positive inputs.
D. The program prints the count of inputs not equal to zero.

Section	4.3 Application: Processing Sentinel Values
Title	Which statement is true about do loop with user input?
type	mc
from	testbank-py-1-ch04-56
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-56

64. What is the sentinel value in the following code snippet?

```
age = 0
sumOfAges = 0
stop = 1
age = int(input("Enter  an age (-1 to stop):"))
while age != -1 :
   sumOfAges =  sumOfAges + age
   age = input("Enter an age (-1 to stop):")
print("Sum  of ages ", sumOfAges)
```

A. 0
B. 1
C. 2
D. -1

Section	4.3 Application: Processing Sentinel Values
Title	Which is the sentinel in this snippet?
type	mc
from	testbank-py-1-ch04-58
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-58

65. What will be the final output of the following code snippet when a user enters input values in the order 10, 20, 30, 40, 50, and -1?

```
sum = 0
count = 0
salary = 0
average = 0
while salary != -1 :
   salary = float(input("Enter  salaries (-1 to stop): "))
   if  salary != -1 :
      sum = sum + salary
      count = count + 1
if count > 0 :
   average = sum / count
```

```
   print("The average salary:  ", average)
else :
   print("No data!")
```

A. The average salary: 0.0
B. The average salary: 30.0
C. The average salary: 24.83333
D. There will be no output as the code snippet will not compile.

Section	4.3 Application: Processing Sentinel Values
Title	What is output of snippet with input that includes a sentinel?
type	mc
from	testbank-py-1-ch04-59
section	4.3 Application: Processing Sentinel Values
id	testbank-py-2-ch04-59

66. Storyboards are a helpful part of the design process because the storyboard develops
A. A pseudocode description of the algorithm being designed
B. The mathematical formulas required for computing a correct answer
C. The information needed to solve the problem, and how to present that information
D. The amount of time and space needed to find a solution

Section	4.4 Problem Solving: Storyboards
Title	What is the role of the storyboard?
type	mc
section	4.4 Problem Solving: Storyboards
id	testbank-py-1-ch04-61

67. When designing storyboards, it is a good idea to use different colors to
A. Make it easy to distinguish between user input and program output.
B. Match the colors your program will use when it is finally designed.
C. Emphasize the difference between numbers and words.
D. Draw lines to divide up panels into different regions.

Section	4.4 Problem Solving: Storyboards
Title	What is the role of colors when designing using storyboards?
type	mc
section	4.4 Problem Solving: Storyboards
id	testbank-py-1-ch04-62

68. Suppose you must design a program to calculate the roll-out (number of inches traveled in one revolution of the pedals of a bicycle based on its gear combinations). The user must provide the gear sizes, which must be converted into roll-out for all different gear combinations. How can the flow of user interaction for this problem be designed?
A. Hand-tracing can confirm code that implements gear selection.
B. Pseudocode can guide algorithm design through divide-and-conquer strategy.
C. A storyboard can be used.
D. The physical gears can lead to ideas for the correct algorithm to use.

Section	4.4 Problem Solving: Storyboards
Title	How can user interaction be designed for an example problem?
type	mc
section	4.4 Problem Solving: Storyboards
id	testbank-py-1-ch04-63

69. Which statement about storyboards is true?
A. A storyboard can help prevent potential user confusion early in the design process.
B. Storyboards are used primarily to understand how implemented programs work.
C. The storyboard helps to train users about how to use software.

D. Storyboards have no relationship to the structure of an actual working program.

Section	4.4 Problem Solving: Storyboards
Title	Which statement about storyboards is true?
type	mc
section	4.4 Problem Solving: Storyboards
id	testbank-py-1-ch04-64

70. What will be printed by the statements below?

```
a = 10
while a  > 5 :
   print(a , end = " ")
   a = a - 2
```

A. 10 9 8 7 6 5
B. 10 8 6 4
C. 10 8 6
D. 10 8

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-68

71. What will be printed by the statements below?

```
val = 1
sum = 0
while val < 5 :
   sum = sum + val
   val = val + 1
print(sum)
```

A. 4
B. 5
C. 10
D. 15

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-70

72. What will be printed by the statements below?

```
val = 1
sum = 0
while val  < 5 :
   sum = 0
   sum = sum + val
   val = val + 1
print(sum)
```

A. 15
B. 10

C. 5
D. 4

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-71

73. What will be printed by the statements below?

```
for ctr in range(0, 10) :
   print(ctr, end = " ")
```

A. 0 1 2 3 4 5 6 7 8 9 10
B. 0 1 2 3 4 5 6 7 8 9
C. 0 2 4 6 8
D. 0 1 3 5 7 9

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-72

74. What will be printed by the statements below?

```
for ctr in range(10, 5, -1) :
   print(ctr, end = " ")
```

A. 10 9 8 7 6 5
B. 10 9 8 7 6
C. 5 6 7 8 9 10
D. 6 7 8 9 10

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-73

75. Which of the following loops will print the odd numbers between 0 and 20?

A.
```
num = 1
while num < 20 :
   print(num, " ")
   num = num + 2
```

B.
```
num = 1
while num < 20 :
   print(num, " ")
   num = num + 1
```

C.
```
num = 0
while num < 20 :
   print(num,  " ")
   num = num + 2
```

D.

```
num = 1
while num < 20 :
   num = num + 2
   print(num, " ")
```

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-74

76. Which of the following loops will print the odd numbers between 0 and 20?

A.

```
num = 1
while num < 11 :
   value  = num * 2 - 1
   print(value, " ")
   num = num + 1
```

B.

```
num = 1
while num < 20 :
   value = num * 2 - 1
   print(value, " ")
   num = num + 1
```

C.

```
num = 1
while num < 10 :
   print(num, " ")
   num = num + 2
```

D.

```
num = 1
while num < 20 :
   num = num + 2
   print(num, " ")
```

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-75

77. Which of the following conditions can be added to the code below so it will loop until the value of sum is greater than 100?

```
sum = input("enter an integer")
while #  Put condition here :
   sum = sum + input("Enter an integer")
```

A.

```
sum != 0
```

B.

```
sum <= 100
```

C.

```
sum > 100
```

D.

```
sum == 100
```

Section	4.5 Common Loop Algorithms
Title	Which of the following conditions can be added to the code below so it will loop until the value of sum is greater than 100?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-76

78. What does the following code compute?

```
sum = 0
count = 0
value = input("enter an  integer")
while value > 0 :
   sum = sum + value
   count = count + 1
   value = input("enter next integer")
result = sum * 1.0 / count
print(result)
```

A. The average of all the integers in the input
B. The sum of all the positive integers in the input divided by the number of integers in the input
C. The average of all the positive integers in the input
D. The second smallest value in the input

Section	4.5 Common Loop Algorithms
Title	What does the following loop compute?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-77

79. What is the output of the code below?

```
for val in range(0, 4) :
   print("+", end = "")
   for num in range(0,  val) :
      print("0",  end = "")
```

A. +0+00+000+0000
B. +000+000+000+000
C. ++0+00+000
D. ++++000000

Section	4.5 Common Loop Algorithms
Title	What is the output of the code below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-79

80. What is the output of the code below?

```
num = 1
for val in range(0, 4) :
   sum = val
   for x in  range(0, val, num) :
      sum = sum +  x
   print(sum , end  = " ")
```

A. 1 3 6
B. 1 2 3 6
C. 0 1 3 6
D. 0 1 2 3 3

Section	4.5 Common Loop Algorithms
Title	What is the output of the code below?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-80

81. How many times does the following loop execute?

```
i = 0
found = False
while i < 100 and found != True :
   i = i + 1
   print(i, end = " ")
   j = i * i
   if i * i * i % j == j :
      found = True
```

A. 10 times
B. 20 times
C. 100 times
D. An infinite number of times

Section	4.5 Common Loop Algorithms
Title	How many times does the following loop execute?
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-81

82. The following program is supposed to sum all of the numbers entered by the user. What line of code must be inserted in the blank so that the program will achieve this goal?

```
total = 0.0
inputStr = input("Enter a value: ")
while inputStr != "" :
   value = float(inputStr)
   ____________________
   inputStr = input("Enter a value: ")
```

A. `value = value + inputStr`
B. `value = value + total`
C. `total = total + inputStr`
D. `total = total + value`

Section	4.5 Common Loop Algorithms
Title	Complete the while loop that sums the numbers entered by the user
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-84

83. The following program is supposed to count how many even numbers are entered by the user. What line of code must be inserted in the blank so that the program will achieve this goal?

```
evens = 0
```

```
inputStr = input("Enter a value: ")
__________________
   value = int(inputStr)
   if value % 2 == 0:
      evens = evens + 1
   inputStr = input("Enter a value: ")
```

A. `while inputStr != 0 :`
B. `while inputStr % 2 == 0 :`
C. `while inputStr == 2 or 4 or 6 or 8 or 10 or ... :`
D. `while inputStr != "" :`

Section	4.5 Common Loop Algorithms
Title	Complete the while loop that counts the number of even numbers entered by the user
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-85

84. The following program is supposed to continue reading values from the user until a value between 25 and 75 is entered. What line of code must be inserted in the blank so that the program will achieve this goal?

```
value = int(input("Enter a value: "))
__________________
   value = int(input("Enter a value: "))
```

A. `while value >= 25 or value <= 75 :`
B. `while value >= 25 and value <= 75 :`
C. `while value < 25 or value > 75 :`
D. `while value < 25 and value > 75 :`

Section	4.5 Common Loop Algorithms
Title	Complete the while loop that reads values until the user enters a value between 25 and 75
type	mc
section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-86

85. The following program is supposed to print a message any time the user enters two consecutive values that are the same. What line of code must be inserted in the blank so that the program will achieve this goal?

```
value = int(input("Enter a value: ")
inputStr = input("Enter a value: ")
while inputStr != "" :
   previous = value
   value = int(inputStr)
   __________________
      print("Found consecutive values that are the same")
   inputStr = input("Enter a value: ")
```

A. `if value == inputStr :`
B. `if value == input :`
C. `if previous == inputStr :`
D. `if previous == value :`

Section	4.5 Common Loop Algorithms
Title	Complete the while loop for finding consecutive identical values
type	mc

section	4.5 Common Loop Algorithms
id	testbank-py-1-ch04-87

86. How many times does the while loop execute?

```
s = "abcdEfghI"
found = False
count = 0
while found == False :
   if s[count].isupper() :
      print(letter)
      found = True
   count = count + 1
```

A. 9 times
B. 8 times
C. 5 times
D. 1 time

Section	4.5 Common Loop Algorithms
Title	Finding the first match
type	mc
from	testbank-py-1-ch04-65
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-65

87. Consider the following code snippet. What should be placed in the blank to cause a message to be displayed when the user enters the same letter twice in a row?

```
letter = input("Enter the next letter in the  alphabet: ")
while letter != "":
   previous = letter
   letter = input("Enter the next letter")
   if _____________________ :
      print("Duplicate input")
```

A. `letter == letter`
B. `alphabet[0] == letter`
C. `letter == previous`
D. `alphabet[0] == previous`

Section	4.5 Common Loop Algorithms
Title	Compare adjacent values
type	mc
from	testbank-py-1-ch04-66
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-66

88. What is the output of this code snippet if the user enters the numbers 1 2 3 4 -1?

```
total = 0
validNumber = True
while validNumber :
   value = int(input("Please enter a positive value < 100: "))
   if value > 0 and value < 100 :
      total = total + value
   else :
      validNumber = False
print(total)
```

A. 15
B. 14
C. 12
D. 10

Section	4.5 Common Loop Algorithms
Title	What is the output of this code snippet with this user input?
type	mc
from	testbank-py-1-ch04-67
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-67

89. What will be printed by the statements below?

```
a = 10
while a  > 5 :
   a = a - 2
   print(a , end = " ")
```

A. 10 8 6
B. 10 8 6 4
C. 8 6
D. 8 6 4

Section	4.5 Common Loop Algorithms
Title	What will be printed by the statements below?
type	mc
from	testbank-py-1-ch04-69
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-69

90. What is printed by the following code segment?

```
position = 0
str = input("Enter a string: ")
while position < len(str) and str[position] != 'e' :
   position = position + 1
print(position)
```

A. The position of the first 'e' in the string or the length of the string if there is no 'e'
B. The position of the last 'e' in the string or the length of the string if there is no 'e'
C. The position of the first character that is not an 'e' in the string or the length of the string if there is no character that is not an 'e'
D. The position of the last character that is not an 'e' in the string or the length of the string if there is no character that is not an 'e'

Section	4.5 Common Loop Algorithms
Title	What does the code segment below print?
type	mc
from	testbank-py-1-ch04-78
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-78

91. Which code snippet produces the sum of the first n positive even numbers? Note that 0 is neither positive nor negative.

A.

```
   sum = 0
   for i in range(1, n) :
```

```
      if i % 2 == 0 :
         sum = sum + i
```

B.

```
sum = 0
for i in range(1, n + 1) :
   sum = sum + i * 2
```

C.

```
sum = 0
for i in range (0, n) :
   if i % 2 == 0 :
      sum = sum + i
```

D.

```
sum = 0
for i in range(1, n) :
   sum = sum + i * 2
```

Section	4.5 Common Loop Algorithms
Title	Which code snippet produces the sum of the first n even numbers?
type	mc
from	testbank-py-1-ch04-82
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-82

92. What is the output of this loop?

```
i = 0
found = False
while i < 20 and found != True :
   sum = i * 2 + i * 3
   print(sum, end=" ")
   if sum > 50 :
      found = True
   i = i + 1
```

A. 0 5 10 15 20 25 30 35 40 45 50 55
B. 0
C. No output, compilation error
D. 0 5 10

Section	4.5 Common Loop Algorithms
Title	What is the output of loop with Boolean?
type	mc
from	testbank-py-1-ch04-83
section	4.5 Common Loop Algorithms
id	testbank-py-2-ch04-83

93. Which of the following for loops will run the loop body 5 times?

A. `for i in range(0, 4) :`
B. `for i in range(0, 5) :`
C. `for i in range(0, 6) :`
D. `for i in range(1, 5) :`

Section	4.6 The for Loop
Title	Which of the following for loops will run the loop body 5 times
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-100

94. Which of the following for loops will run the loop body 5 times?

A. `for i in range(4, 0, -1) :`
B. `for i in range(5, 0, -1) :`
C. `for i in range(5, 1, -1) :`
D. `for i in range(6, 0, -1) :`

Section	4.6 The for Loop
Title	Which of the following for loops will run the loop body 5 times
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-101

95. What is the value of `j` at the end of the following code segment?

```
j = 0
for i in range(0, 4) :
   j = j + i
```

A. 4
B. 6
C. 8
D. 10

Section	4.6 The for Loop
Title	Trace a for loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-102

96. What is the value of `j` at the end of the following code segment?

```
j = 0
for i in range(1, 10) :
   if j < 10 :
      j = j + i
```

A. 0
B. 1
C. 9
D. 10

Section	4.6 The for Loop
Title	Trace a for loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-103

97. Consider the following `for` loop:

```
for i in range(0, 10) :
   print(i)
```

Which of the following `while` loops will generate the same output?

A.

```
i = 0
while i < 10 :
   print(i)
```

```
      i = i + 1
```

B.

```
i = 0
while i <= 10 :
   print(i)
   i = i + 1
```

C.

```
i = 1
while i < 10 :
   print(i)
   i = i + 1
```

D.

```
i = 1
while i <= 10 :
   print(i)
   i = i + 1
```

Section	4.6 The for Loop
Title	Convert a for loop to a while loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-104

98. Consider the following `while` loop:

```
j = 10
while j >= 5 :
   print("X")
   j = j - 1
```

Which of the following `for` loops will generate the same output?

A.

```
for j in range(10, 5) :
   print("X")
```

B.

```
for j in range(10, 5, -1) :
   print("X")
```

C.

```
for j in range(10, -1, -2) :
   print("X")
```

D.

```
for j in range(0, 5) :
   print("X")
```

Section	4.6 The for Loop
Title	Convert a while loop to a for loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-105

99. What is the output of this loop?

```
counter = 1
for i in range(1, 100) :
   counter = counter + 1
```

```
print(counter)
```

A. 100
B. 49
C. 60
D. 10

Section	4.6 The for Loop
Title	What is the output of for loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-88

100. What does the following code snippet print?

```
fruitName = "banana"
for letter in fruitName :
   print(letter, end = " ")
```

A. banana
B. b a n a n a
C. Nothing, there is a syntax error
D. Nothing, this is an infinite loop

Section	4.6 The for Loop
Title	What does the for loop print?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-89

101. What is the output of the following code snippet?

```
for i in range(4) :
   for j in  range(3) :
      print("*", end="")
   print()
```

A. Prints 3 rows of 4 asterisks each
B. Prints 12 rows of asterisks
C. Prints 4 rows of 3 asterisks each
D. Prints 12 rows of 3 asterisks each

Section	4.6 The for Loop
Title	Which is a loop with a problematic condition?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-90

102. How many times does the loop execute in the following code fragment?

```
for i in  range(0, 50, 4) :
   print(i)
```

A. 11
B. 12
C. 13
D. 14

Section	4.6 The for Loop
Title	How many times does for loop execute?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-91

103. How many times does the following code snippet display "Loop Execution"?

```
for i in range(0, 10) :
   print("Loop Execution")
```

A. Ten times.
B. The code snippet does not run because of a compile error.
C. Infinite loop.
D. Only one time.

Section	4.6 The for Loop
Title	How many times does for loop execute?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-92

104. Which of the following is considered an equivalent while loop for this for loop?

```
s = 0
for i in range(1, 10) :
   s = s + i
```

A.
```
s =  0
i = 0
while i <= 10 :
   s = s + i
   i = i + 1
```

B.
```
s =  0
i = 1
while i < 10 :
   s = s + i
   i = i + 1
```

C.
```
s =  0
i = 1
while i <= 10 :
   s = s + i
   i = i + 1
```

D.
```
s =  0
i = 0
while i < 10 :
   s = s + i
   i = i + 1
```

Section	4.6 The for Loop
Title	Rewrite a for loop using a while loop
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-93

105. Which statement about this code snippet is accurate?

```
years = 50
balance = 10000
targetBalance = 20000
rate = 3
for i in range(1 , years + 1) :
   if balance  >= targetBalance :
      i = years +  1
   else :
      interest =  balance * rate / 100
   balance =  balance + interest
```

A. The loop will run 50 times.
B. The loop will never stop.
C. The loop will run at most 50 times, but may stop earlier when balance exceeds or equals targetBalance.
D. There is a compilation error.

Section	4.6 The for Loop
Title	For loop with inside if statement
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-94

106. What values does counter variable i assume when this loop executes?

```
for i in range(20, 2, -6) :
   print(i, end = ", ")
```

A. 20, 14, 8, 2
B. 20, 14, 8, 2, -4
C. 20, 14, 8
D. 14, 8, 2

Section	4.6 The for Loop
Title	Which values does the counter variable assume in for loop?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-95

107. What is the output of the following code snippet?

```
f1 = 0
f2 = 1
print(f1, " ")
print(f2, " ")
for i in range(1, 11) :
   fRes = f1 + f2
   print(fRes, end = " ")
   f1 = f2
   f2 = fRes
print()
```

A. 0 1 5 7 9 11 13 15 17 19 55
B. 0 1 1 2 3 5 8 13 21 34 55 89
C. 0 1 4 6 8 10 12 14 16 18 34
D. 0 1 6 7 9 12 14 17 19 21 55

Section	4.6 The for Loop
Title	What is the output of for loop?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-97

108. How many iterations does the following loop carry out?

```
for i in range (-10, 11, 2) :
```

A. infinite
B. None because of compilation error
C. 11 times
D. 20 times

Section	4.6 The for loop
Title	How many times does the loop execute?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-98

109. How many times does the following loop execute?

```
for d in range(1, 10) :
   d = d / 3
   print(d , " ")
```

A. 10
B. 9
C. 8
D. An infinite number of times

Section	4.6 The for Loop
Title	How many times does the following loop execute?
type	mc
section	4.6 The for Loop
id	testbank-py-1-ch04-99

110. Consider the following code segment:

```
s = "Hello World!"
_________
  print(ch)
```

What should be placed in the blank so that the letters of `s` are printed out with one letter appearing on each line?

A. `for ch in range(s) :`
B. `for ch in s :`
C. `for range(ch, s) :`
D. `for s in ch :`

Section	4.6 The for Loop
Title	Which loop prints out the letters of a string with each character appearing on its own line?
type	mc
section	4.6 The for Loop
id	testbank-py-2-ch04-151

111. Which of the following for loops is illegal?

A. `for i in range(0, ) :`
B. `for i in range(0) :`
C. `for i in range(0, k) :`
D. `for i in range( , ) :`

Section	4.6 The for Loop
Title	Which of the following for loops is illegal?
type	mc
from	testbank-py-1-ch04-96
section	4.6 The for Loop
id	testbank-py-2-ch04-96

112. When does the execution switch from the inner to the outer loop?

```
j = 1
for i in  range(0, 10) :
   while(j < 5) :
      print("Hello")
      if j == 2 :
         j = 6
      j = j + 1
   print("switch  from inner to outer", i, "  ", j)
```

A. When the value of j becomes 6
B. When the program executes completely
C. When the condition for the outer loop is met
D. When the value of i is incremented

Section	4.7 Nested Loops
Title	When does execution switch from inner to outer loop?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-106

113. A loop inside another loop is called:

A. A sentinel loop
B. A nested loop
C. A parallel loop
D. A while loop

Section	4.7 Nested Loops
Title	What is a loop inside another loop?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-107

114. What is the first and last value of i to be displayed by the following code snippet?

```
n = 20
for i in range(0, n) :
   for  j in range(0, i) :
      print(i)
```

A. 0 and 20
B. 1 and 20
C. 0 and 19
D. 1 and 19

Section	4.7 Nested Loops
Title	What are first and last values displayed by nested for loop?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-108

115. How many times will the output line be printed in the following code snippet?

```
for num2 in range(1, 4) :
   for num1 in range(0, 3) :
      print(num2, " ", num1)
```

A. 3 times
B. 6 times
C. 9 times
D. 12 times

Section	4.7 Nested Loops
Title	How many times will inner for loop execute?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-109

116. What is the last output line of the code snippet given below?

```
for i in range(3) :
   for j in  range(5) :
      if i % 2 ==  j % 2 :
         print("*", end="")
      else :
         print(" ", end="")
   print()
```

A. No output
B. * * * * * * ... infinite loop
C. * * * *
D. * * *

Section	4.7 Nested Loops
Title	What is output of nested loops?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-110

117. What is the last output line of the code snippet given below?

```
i = 0
j = 0
while i  < 10 :
   num = 1
   j = i
   while j > 1 :
      print(j, end = " ")
      num = num * 2
      j = j -  1
   print("***")
   i = i + 1
```

A. 3 2 ***

B. 9 8 7 6 5 4 3 2 ***
C. 8 7 6 5 4 3 2 ***
D. 2 ***

Section	4.7 Nested Loops
Title	What is output of nested loops?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-111

118. Which for loop prints data across each row in the following code snippet?

```
for i in range(1, 4) :
   for j in range(1, 4) :
      print("X", end="")
   print("")
```

A. The inner for loop
B. The outer for loop
C. Both for loops
D. Another missing for loop

Section	4.7 Nested Loops
Title	Which for loop in snippet represents rows?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-113

119. What will be the output of the following code snippet?

```
for i in range(0,7) :
   for j in range(7, i, -1) :
      print("*", end="")
   print("")
```

A. A rectangle with six rows and seven columns of asterisks. The number of rows increments by one on completion of one iteration of the inner loop.
B. A right triangle with six rows and seven columns of asterisks. The number of columns increments by one on completion of one iteration of the inner loop.
C. A rectangle with seven rows and six columns of asterisks. The number of rows increments by one on completion of one iteration of the inner loop.
D. A right triangle with seven rows and seven columns of asterisks. The number of columns decrements by one on completion of one iteration of the inner loop.

Section	4.7 Nested Loops
Title	What is output of nested for loops?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-114

120. In the following code snippet, how many times will "Hello" be printed?

```
for i in range(0, 10) :
   for j in range(1, 5) :
      print("Hello")
```

A. 40

B. 15
C. 39
D. 14

Section	4.7 Nested Loops
Title	When does execution switch from inner to outer loop in snippet?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-115

121. Which of the following code segments is an example of a nested loop?

A.
```
while i < 0 :
   if x == 10 :
```

B.
```
while i < 0 :
   while x == 10 :
```

C.
```
if i < 0 :
   while x == 10 :
```

D.
```
if i < 0 :
   if x == 10 :
```

Section	4.7 Nested Loops
Title	Which of the following code segments is an example of a nested loop?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-116

122. Consider the following code segment:

```
for i in range(4) :
   _____________________
      print("*", end="")
   print()
```

It is supposed to generate the following output:

```
***
***
***
***
```

Which line of code should be placed in the blank to achieve this goal?

A. `for j in range(3) :`
B. `for j in range(4) :`
C. `for j in range(i) :`
D. `for j in range(j) :`

Section	4.7 Nested Loops
Title	Draw a pattern with nested for loops
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-117

123. How many copies of the letter `A` will the following code segment display?

```
for i in range(100) :
   for j in range(5) :
      print("A")
```

A. 400
B. 495
C. 500
D. 605

Section	4.7 Nested Loops
Title	How many copies of the letter A will be displayed?
type	mc
section	4.7 Nested Loops
id	testbank-py-1-ch04-118

124. What does the following code snippet display?

```
for n in  range(1, 11) :
   for x in range(1, 11) :
      print(n*x, end = " ")
   print()
```

A. It displays a multiplication table for numbers 1-10 times 1-10
B. Nothing because it has compilation error.
C. It displays a table of all numbers squared from 1-10
D. It displays a multiplication table for numbers 1-11 times 1-11

Section	4.7 Nested loops
Title	What does for loop with character creation display?
type	mc
from	testbank-py-1-ch04-112
section	4.7 Nested Loops
id	testbank-py-2-ch04-112

125. What type of chart shows the distribution of data across a fixed number of categories?
A. A Grade Chart
B. A Height Chart
C. A Histogram
D. A Plot

Section	4.7 Nested Loops
Title	What type of chart shows the distribution of data across a fixed number of categories?
type	mc
section	4.7 Nested Loops
id	testbank-py-2-ch04-139

126. Which print statement displays the value of `s` without starting a new line?
A. `print(end="s")`
B. `print(s, end="")`
C. `print(s)`
D. `print("s")`

Section	4.7 Nested Loops
Title	Which print statement displays a value without starting a new line?
type	mc
section	4.7 Nested Loops

id	testbank-py-2-ch04-152

127. What is the output of this code snippet?

```
str = "ABCabc"
i = 0
while i < len(str) :
   ch = str[i]
   if ch.islower() :
      print(i ,  " ")
   else :
      i = i + 1
```

A. 3 4 5
B. 3
C. 3 3 3 3 3 ... (infinite loop)
D. 0 1 2

Section	4.8 Processing strings
Title	What is the output of code snippet with while loop?
type	mc
section	4.8 Processing Strings
id	testbank-py-1-ch04-119

128. Consider the following code segment. It is supposed to count the number of digits (0 - 9) in a string, `text`.

```
count = 0
for char in text :
   _____________________
      count = count + 1
```

What line of code should be placed in the blank to achieve this goal?

A. `if text[char] >= "0" and text[char] <= "9" :`
B. `if text[count] >= "0" and text[count] <= "9" :`
C. `if char >= "0" and char <= "9" :`
D. `if text >= "0" and char <= "9" :`

Section	4.8 Processing Strings
Title	Complete the for loop that counts the number of digits in a string
type	mc
section	4.8 Processing Strings
id	testbank-py-1-ch04-120

129. Is the code snippet written below legal?

```
s = "1234"
for i in range (0, 4) :
   print(s[i], s[i + 1])
```

A. Yes.
B. No; there should not be a colon at the end of line 2.
C. No; `for i = 3, s[i + 1]` will result in an string index out of range error.
D. No; `for i = 0, s[i]` will result in an string index out of range error

Section	4.8 Processing Strings
Title	Are there errors in for loop?
type	mc

section	4.8 Processing Strings
id	testbank-py-1-ch04-121

130. Consider the following code segment:

```
found = False
position = 0
text = "Hello World!"
while not found and position < len(text) :
   if text[position] == "o" :
      found = True
   else :
      position = position + 1
```

What is the value of `position` at the end of this code segment?

A. 4
B. 5
C. 7
D. 8

Section	4.8 Processing Strings
Title	Trace a while loop that processes a string
type	mc
section	4.8 Processing Strings
id	testbank-py-1-ch04-122

131. Consider the following code segment. It is designed to identify the first location within a string, `text` where two adjacent characters are the same.

```
i = 1
found = False
while not found and i < len(text) :
   ____________________ :
      found = True
   else :
      i = i + 1
```

What line of code should be placed in the blank to achieve this goal?

A. `if text[i] == text[0] :`
B. `if text[i] == text[i - 1] :`
C. `if text[i] == text[i] :`
D. `if text[i] == text[i + 1] :`

Section	4.8 Processing Strings
Title	Complete the loop that finds the location of two adjacent characters that are the same
type	mc
section	4.8 Processing Strings
id	testbank-py-1-ch04-123

132. What will be the range of the random numbers generated by the following code snippet?

```
from random import randint
randomNum = randint(1,50)
```

A. Between 1 and 49
B. Between 0 and 50
C. Between 0 and 49

D. Between 1 and 50

Section	4.9 Application: Random Numbers and Simulations
Title	What is range of random numbers generated by snippet?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-124

133. Which of the following is the correct code snippet for throwing a pair of dice to get a sum of the numbers on two dice between 2 and 12 with the same probability as when throwing actual dice?

A.
```
randint(1, 6)
```

B.
```
randint(2, 12)
```

C.
```
randint(1, 6) + randint(1, 6)
```

D.
```
randint(1, 12) - 2
```

Section	4.9 Application: Random Numbers and Simulations
Title	Which code simulates throwing two dice and summing the result?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-125

134. Suppose that a program asks a user to enter multiple integers, either positive or negative, to do some calculation. The data entry will stop when the user enters a certain value to indicate the end of the data. What value should the code use as the sentinel?

A. 0
B. -1
C. 999
D. An alphabetic character

Section	4.9 Application: Processing Sentinel Values
Title	What should be the sentinel value in this situation?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-126

135. Which of the following activities can be simulated using a computer?

I. Waiting time in a line at a restaurant

II. Tossing a coin

III. Shuffling cards for a card game

A. I only
B. II only
C. I and II only
D. I, II, and III

Section	4.9 Application: Random Numbers and Simulations
Title	Which activities can be computer simulated?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-127

136. What range of numbers are generated by the random() function?
    A. greater than or equal to zero and less than one
    B. greater than zero and less than one
    C. greater than zero and less than or equal to one
    D. greater than or equal to zero and less than or equal to one

Section	4.9 Application: Random Numbers and Simulations
Title	What is output of the code snippet with random()?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-128

137. Assume the following variable has been declared and given a value as shown:

```
from random import randint
number  = randint(0, 27) * 2 + 3
```

What are the smallest and largest values that may be assigned to number?
    A. 3, 55
    B. 0, 27
    C. 3, 57
    D. 0, 26

Section	4.9: Application: Random Numbers and Simulations
Title	What are the smallest and largest values that may be assigned to number?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-135

138. Which line of code will generate a random integer from 1 up to and including 10, and store it in `x`? Assume that the `randint` function has been imported from the `random` module.
    A. `x = randint(0, 10)`
    B. `x = randint(0, 11)`
    C. `x = randint(1, 10)`
    D. `x = randint(1, 11)`

Section	4.9 Application: Random Numbers and Simulations
Title	Which line of code will generate a random integer from 1 up to and including 10?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-137

139. Which line of code will generate a random floating-point number between 0 and 6, and store it in `x`? Assume that the `random` function has been imported from the `random` module.
    A. `x = random()`
    B. `x = random() * 6`
    C. `x = random(6)`
    D. `x = random(0, 6)`

Section	4.9 Application: Random Numbers and Simulations
Title	Which line of code will generate a random floating-point number between 0 and 6?
type	mc
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-1-ch04-138

140. What does the following code do?

```
from random import randint
```

```
sum = 0
COUNT = 1000
for i in range(1,COUNT + 1) :
   sum = sum + randint(0, 100)
print(sum / COUNT)
```

A. It simulates the outcome of throwing a coin.
B. It calculates the average of 1000 random numbers between 0 and 100.
C. It performs a Monte Carlo fluid dynamics simulation.
D. It calculates the average of 1000 random numbers between 1 and 101.

Section	4.9 Application: Random Numbers and Simulations
Title	What does code snippet with random numbers do?
type	mc
from	testbank-py-1-ch04-129
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-2-ch04-129

141. Which of the following statements correctly prints the result of simulating the toss of a pair of coins to get 0 (heads) or 1 (tails) for each coin?

A.
```
print(randint(0, 1))
```

B.
```
print(randint(1, 1))
```

C.
```
print(randint(0, 2), randint(0, 2))
```

D.
```
print(randint(0, 1), randint(0, 1))
```

Section	4.9 Application: Random Numbers and Simulations
Title	Which is correct for simulating the toss of a pair of coins?
type	mc
from	testbank-py-1-ch04-131
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-2-ch04-131

142. Which of the following code snippets will generate a random number between 0 and 79?

A.
```
val = int(random() % 80)
```

B.
```
val = int(random() * 80 - 1)
```

C.
```
val = int(random() % 79)
```

D.
```
val = int(random() * 80)
```

Section	4.9 Application: Random Numbers and Simulations
Title	Which code generates random numbers 0-79?
type	mc
from	testbank-py-1-ch04-132
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-2-ch04-132

143. Which of the following expressions will generate a random integer in the range -20 to 20, inclusive,

where each value has an equal chance of being generated?

A. `randint (-20, 20)`
B. `randint(20) - 41`
C. `randint (-20) + 40`
D. `randint(41) - 20`

Section	4.9: Application: Random Numbers and Simulations
Title	Which of the following will generate a random integer in the range 20 to 20, inclusive, where each value has an equal chance of being generated?
type	mc
from	testbank-py-1-ch04-134
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-2-ch04-134

144. Assume the following variable has been declared and given a value as shown:

```
from random import random
number = random() * 2 + 3
```

What are the smallest and largest values that may be assigned to number?

A. 3.0, 5.0 (excluding 5.0)
B. 0.0, 6.0 (excluding 6.0)
C. -3.0, 3.0 (including 3.0)
D. 0.0, 3.0 (including 3.0)

Section	4.9: Application: Random Numbers and Simulations
Title	What are the smallest and largest values that may be assigned to number?
type	mc
from	testbank-py-1-ch04-136
section	4.9 Application: Random Numbers and Simulations
id	testbank-py-2-ch04-136

145. Using computer algorithms to manipulate digital images is known as:

A. Computer vision
B. Data compression
C. Digital photography
D. Image processing

Section	4.10 Graphics: Digital Image Processing
Title	Using computer algorithms to manipulate digital images is known as:
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-140

146. A digital image is a collection of _____ arranged in a grid of rows and columns.

A. canvases
B. dots
C. elementary elements
D. pixels

Section	4.10 Graphics: Digital Image Processing
Title	A digital image is a collection of _____ arranged in a grid of rows and columns.
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-141

147. In an RGB color model, what color is represented by 255, 255, 255?

A. black
B. green

C. white
D. yellow

Section	4.10 Graphics: Digital Image Processing
Title	In an RGB color model, what color is represented by 255, 255, 255?
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-142

148. What RGB values represent green?
A. 0, 0, 255
B. 0, 255, 0
C. 128, 128, 128
D. 255, 0, 0

Section	4.10 Graphics: Digital Image Processing
Title	What RGB values represent green?
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-143

149. Which statement loads an image from a file and stores it in a variable? Assume that the `ezgraphics` module has already been imported using the statement:

```
from ezgraphics import GraphicsImage, GraphicsWindow
```

A. `graphicsImage = Load("mountain.gif")`
B. `Image("mountain.gif")`
C. `image = ("mountain.gif")`
D. `image = GraphicsImage("mountain.gif")`

Section	4.10 Graphics: Digital Image Processing
Title	Which statement loads an image from a file and stores it in a variable?
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-144

150. What programming language structure is used iterate over all of the individual pixels in an image?
A. A for loop (not nested)
B. A nested for loop
C. A nested if statement
D. A while loop (not nested)

Section	4.10 Graphics: Digital Image Processing
Title	What programming language structure is typically used to process all of the pixels in an image?
type	mc
section	4.10 Graphics: Digital Image Processing
id	testbank-py-2-ch04-145

151. Which of the following image processing operations changes the grid structure of the image without modifying the pixel values?
A. Converting an image to grayscale
B. Darkening an image
C. Replacing an image with its negative
D. Rotating an image

Section	4.10 Graphics: Digital Image Processing

Title Which of the following image processing operations changes the grid structure of the image without modifying the pixel values?
type mc
section 4.10 Graphics: Digital Image Processing
id testbank-py-2-ch04-146

152. Which of the following is **not** a benefit of solving a simpler problem first?
A. It can be difficult to figure out how to get started when solving a large task.
B. Solving the simpler problem first will motivate you to solve the harder problem.
C. Usually, you learn something useful from solving the simpler task.
D. When the simpler problem is solved first it reduces the amount of time the computer needs to compute the answer for the larger problem.

Section 4.11 Problem Solving: Solve a Simpler Problem First
Title Why is it beneficial to start by solving a simpler problem first?
type mc
section 4.11 Problem Solving: Solve a Simpler Problem First
id testbank-py-2-ch04-147