

Basic Python — Practice

CSCI 40

Fall 2026

Total Score: _____/4

LLM evaluation

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Re-evaluation pending after quiz-bank corrections.

Quiz Topic 02: Basic Python

1 Basic Math

Note. You are responsible for all of the basic math operators and understanding how order of operations works. The quizzes will only test integer math that you should be able to complete easily with paper and pencil.

Problem 1. What is the output of the following python code?

```
1  x = 2 // 3
2  y = x * 4
3  z = y + 5
4  print("z=", z)
```

Problem 2. What is the output of the following python code?

```
1  x = 3 // 2
2  y = x % 4
3  z = y - 5
4  print("z=", z)
```

Problem 3. What is the output of the following python code?

```
1  x = 3 // 2 # 4
2  y = x % 4
3  z = y - 5 # 2 - 1
4  print("z=", z)
```

Problem 4. What is the output of the following python code?

```
1  print(2 * 2 ** 2 + 3 * 4 % 2)
```

Problem 5. What is the output of the following python code?

```
1  print(2 ** 2 * 2 // 3 - 4 + 2)
```

2 if statements

Note. You are responsible for understanding basic boolean operations (and, or, not) and comparison operators ($\geq$, $>$, $<$, $\leq$, $==$).

Problem 6. What is the output of the following python code?

```
1  x = 4%5
2  y = 4//5
3  if x == 1 or y == 1:
4      result = 0
5  else:
6      result = 1
7  print('result=', result)
```

Problem 7. What is the output of the following python code?

```
1  x = 4-5
2  y = 5-4
3  if x == 1 and y == 1:
4      result = 0
5  else:
6      result = 1
7  print('result=', result)
```

Note. In python, it is common to rely on "truthy" and "falsey" values rather than only the boolean values True and False.

Problem 8. What is the output of the following python code?

```
1  if '':
2      result = 0
3  else:
4      result = 1
5  print('result=', result)
```

Problem 9. What is the output of the following python code?

```
1  if 1.0:
2      result = 0
3  else:
4      result = 1
5  print('result=', result)
```

3 Loops

Note. You are responsible for understanding how while loops behave.

Problem 10. What is the output of the following python code?

```
1  i = 0
2  total = 0
3  while i < 5:
4      total = total + i
5      i += 1
6  print('total=', total)
```

Problem 11. What is the output of the following python code?

```
1  i = 3
2  total = 0
3  while i < 8:
4      total = total * i
5      i += 1
6  print('total=', total)
```

Problem 12. What is the output of the following python code?

```
1  i = 34567
2  total = 0
3  while i > 0:
4      total += 1
5      i //= 10
6  print('total=', total)
```

Note. Truthy/falsey values commonly are used within the condition of while loops in python, not just for if statements.

Problem 13. What is the output of the following python code?

```
1  i = 123
2  total = 0
3  while i:
4      total += 1
5      i //= 10
6  print('total=', total)
```

Note. For loops are much more common in python (and most other programming languages) because they are easier to reason about. Everything that a for loop can do, a while loop can also do. But a while loop can do things that for loops can't (like loop forever). It is considered good style to use for loops whenever possible. The hardest part about for loops is understanding the range function, which is commonly used with for loops.

Problem 14. What is the output of the following python code?

```
1  total = 0
2  for i in range(5):
3      total = total - 1
4  print('total=', total)
```

Problem 15. What is the output of the following python code?

```
1  total = 0
2  for i in range(3, 5):
3      total = total + 1
4  print('total=', total)
```

Problem 16. What is the output of the following python code?

```
1 total = 42
2 for i in range(10, 15, 1):
3     total %= i
4 print("total=", total)
```

Problem 17. What is the output of the following python code?

```
1 total = 0
2 for i in range(10, 0, -2):
3     total -= i
4 print("total=", total)
```

Note. Nested for loops are very common with lists. You will need to implement many nested loops in this class, and you can expect a problem with nested loops on almost every quiz for the remainder of the course.

Problem 18. What is the output of the following python code?

```
1 result = 1
2 for i in range(5):
3     if i<3:
4         result *= 1
5     else:
6         result *= (-1)
7 print('result=', result)
```

Problem 19. What is the output of the following python code?

```
1 result = 1
2 for i in range(3, 5):
3     if i<3:
4         result += 1
5     else:
6         result -= 1
7 print('result=', result)
```

Problem 20. What is the output of the following python code?

```
1  result = 1
2  for i in range(5):
3      if i <= 3:
4          result += i
5      else:
6          result += 1
7  print('result=', result)
```

Problem 21. What is the output of the following python code?

```
1  result = 1
2  for i in range(5):
3      if i > 3:
4          result += i
5      else:
6          result += 1
7  print('result=', result)
```

Problem 22. What is the output of the following python code?

```
1  total = 0
2  for i in range(10, 20, 5):
3      if i%2 == 1 or i<15:
4          total += i
5  print("total=", total)
```

Problem 23. What is the output of the following python code?

```
1  total = 0
2  for i in range(0, 10, 3):
3      if i%2 == 0 or i<5:
4          total += i
5  print("total=", total)
```

4 Lists

Note. A list is the most basic container type in python. For this quiz, you are responsible for how to read from a list, but not how to modify a list. You are responsible for the functions `sum`, `min`, and `max`; you are also responsible for understanding list slices and list indexing.

Problem 24. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  total += xs[0]
4  total += xs[1]
5  total += xs[-3]
6  print('total=', total)
```

Problem 25. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  total += xs[3]
4  total += xs[-1]
5  total += xs[0]
6  print('total=', total)
```

Problem 26. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  total += xs[5]
4  total += xs[-5]
5  total += xs[-4]
6  print('total=', total)
```

Problem 27. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[3:5]
3  total = 0
4  total += ys[0]
5  total += ys[1]
6  total += ys[-1]
7  print('total=', total)
```

Problem 28. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-5:-3]
3  total = 0
4  total += ys[0]
5  total += ys[1]
6  total += ys[-1]
7  print('total=', total)
```

Problem 29. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-5:-3]
3  total = len(ys)
4  print('total=', total)
```

Problem 30. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-5:-3]
3  total = sum(ys)
4  print('total=', total)
```

Problem 31. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-3:-5]
3  total = sum(ys)
4  print('total=', total)
```

Problem 32. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-3:-5:-1]
3  total = sum(ys)
4  print('total=', total)
```

Problem 33. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[:3]
3  total = sum(ys)
4  print('total=', total)
```

Problem 34. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[:3]
3  total = min(ys)
4  print('total=', total)
```

Problem 35. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[:3]
3  total = max(ys)
4  print('total=', total)
```

Problem 36. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[7:]
3  total = sum(ys)
4  print('total=', total)
```

Problem 37. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  ys = xs[-3:]
3  total = sum(ys)
4  print('total=', total)
```

Note. In practice, lists are almost always combined with for loops.

Problem 38. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  for i in range(3):
4      total += xs[i]
5  print('total=', total)
```

Problem 39. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  for i in range(3, 8, 2):
4      total += xs[i]
5  print('total=', total)
```

Problem 40. What is the output of the following python code?

```
1  xs = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
2  total = 0
3  for i in range(-3, -6, -1):
4      total += xs[i]
5  print('total=', total)
```

Problem 41. What is the output of the following python code?

```
1  xs = [1, 3, 5]
2  total = 0
3  for x in xs:
4      total += x
5  print('total=', total)
```

Problem 42. What is the output of the following python code?

```
1  xs = [1, 3, 5]
2  total = 0
3  for x in xs:
4      for i in range(3):
5          total += x*i
6  print('total=', total)
```

Problem 43. What is the output of the following python code?

```
1  xs = [1, 3, 5]
2  ys = [2, 4, 6]
3  total = 0
4  for x in xs:
5      total += x
6      for y in ys:
7          total -= x*y
8  print('total=', total)
```

Problem 44. What is the output of the following python code?

```
1 xss = [[1, 3, 5], [2, 4], [0, 1, 2, 3, 4, 5]]
2 total = 0
3 total += xss[0][0]
4 total += xss[1][1]
5 total += xss[2][2]
6 print('total=', total)
```

Problem 45. What is the output of the following python code?

```
1 xss = [[1, 3, 5], [2, 4], [0, 1, 2, 3, 4, 5]]
2 total = 0
3 total += xss[1][0]
4 total += xss[0][1]
5 total += xss[0][2]
6 print('total=', total)
```

Problem 46. What is the output of the following python code?

```
1 xss = [[1, 3, 5], [2, 4], [0, 1, 2, 3, 4, 5]]
2 total = 0
3 for xs in xss:
4     total += xs[0]
5     for x in xs:
6         total += x
7 print('total=', total)
```

Problem 47. What is the output of the following python code?

```
1 xss = [[1, 3, 5], [2, 4], [0, 1, 2, 3, 4, 5]]
2 total = 0
3 for i in range(2):
4     for j in range(len(xss[i])):
5         total += xss[i][-j]
6 print('total=', total)
```

Problem 48. What is the output of the following python code?

```
1 xss = [[1, 3, 5], [2, 4], [0, 1, 2, 3, 4, 5]]
2 total = 0
3 for i in range(len(xss)):
4     for j in range(i + 1):
5         total += xss[i][j]
6 print('total=', total)
```

5 Functions

Note. Functions allow you to reuse the same piece of code many times. A common acronym for good programming is DRY (don't repeat yourself), and so functions are used all the time. Like nested for loops, expect many problems in future quizzes to involve functions.

Problem 49. What is the output of the following python code?

```
1 x = 10
2 def foo(x):
3     if x - 5:
4         return 1
5     else:
6         x += 1
7     return x
8 x += foo(4)
9 x += foo(5)
10 x += foo(6)
11 print("x=", x)
```

Problem 50. What is the output of the following python code?

```
1 x = 10
2 def foo(x):
3     x += 2
4     return x
5 x += foo(9 + 39 // 10) * 3
6 x += foo(9 + 19 // 10) * 2
7 print("x=", x)
```

Problem 51. What is the output of the following python code?

```
1  x = 10
2  def foo(x):
3      if x % 2:
4          return 1
5      x -= 1
6      return x
7  x += foo(4)
8  x += foo(5)
9  x += foo(6)
10 print("x=", x)
```

Problem 52. What is the output of the following python code?

```
1  x = 10
2  def foo(x):
3      x += 1
4      return x
5  x += foo(9 + 39 // 10) * 2
6  print("x=", x)
```

Problem 53. What is the output of the following python code?

```
1  x = 10
2  def foo(x):
3      return x * 2
4  for i in range(3):
5      x += foo(i)
6  print("x=", x)
```

Problem 54. What is the output of the following python code?

```
1  x = 10
2  def foo(x):
3      if x - 5:
4          return 1
5      else:
6          x -= 1
7      return x
8  x += foo(4)
9  x += foo(5)
10 x += foo(6)
11 print("x=", x)
```

Problem 55. What is the output of the following python code?

```
1  x = 10
2  def foo(x):
3      x += 2
4      return x
5  x += foo(9 + 39 // 10) * 3
6  x += foo(9 + 39 // 10) * 2
7  print("x=", x)
```

Problem 56. What is the output of the following python code?

```
1  def foo(x):
2      total = 0
3      while x > 0:
4          total += 1
5          x //= 10
6      return total
7  x = foo(100)
8  x += foo(1234567)
9  x += foo(3)
10 print("x=", x)
```

Problem 57. What is the output of the following python code?

```
1  def foo(x):
2      total = 0
3      while x > 0:
4          total = total + x % 10
5          x //= 10
6      return total
7  x = foo(100)
8  x += foo(1234567)
9  x += foo(3)
10 print("x=", x)
```