

Problem Set 4, Part I

Important: Your work for Part II will go in separate files. See the assignment for more details.

Problem 1: The + operator

1-1)

- a) 30
- b) 'helloworld'
- c) 'Spring is coming!'
- d) Error, unsupported operand type for +: 'int' and 'str'
- e) Error, can only concatenate str (not "int") to str
- f) [2, 4, 6, 1, 3, 5]

1-2)

The + operator can only work for the addition of the same type of data, like number + number, string + string, or list + list. It can be applied to integer + real number because these two are both numbers, and the result will be a real number.

1-3)

hello + world will produce the result of 30 because hello and world are the variables that store values 10 and 20.

'hello' + 'word' will produce the result of 'helloworld' because it is the addition operation of two strings 'hello' and 'world'.

Problem 2: The * operator

2-1)

- a) 50
- b) 'hihihihihi'
- c) 'hihihi'
- d) 'hihihihihi'
- e) Error, can't multiply sequence by non-int of type 'str'
- f) 'byebyebyebyebyebyebyebyebyebye'

2-2)

Number * number will produce the result of multiplication which is also a number. Number * string will produce a single string with the original string repeating multiple times. The * operator cannot work for the multiplication of two strings.

Problem 3: The len function

3-1)

- a) 7
- b) 5
- c) 5
- d) 3
- e) 0
- f) 4
- g) Error, object of type 'int' has no len()
- h) 3
- i) 5

3-2)

For strings, the len function will produce the number of characters, including the space. For lists, it will produce the number of elements. The len function cannot work for a single number.

Problem 4: The range() function

4-1)

- a) [0, 1, 2]
- b) [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
- c) [5, 6, 7, 8, 9]
- d) [10, 11, 12, 13, 14, 15, 16, 17, 18, 19]
- e) [0, 2, 4, 6, 8]
- f) [0, 3, 6, 9]
- g) [10, 8, 6, 4, 2]
- h) [20, 19, 18, 17, 16]

4-2)

For the range() function of one argument, it will produce a list of integers from 0 to the number-1. For the range() function of two arguments which is like range(low, high), it will produce a list of integers from low to high-1. For the range() function of three arguments which is like range(low, high, positive skip), it will produce a list of integers from low to high-1 with skipping. For the range() function of three arguments which is like range(high, low, negative skip), it will produce a list of integers from high to low+1 with skipping.

4-3)

- a) range(5)
- b) range(10, 4, -1)