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| **INSY336 Coding Foundations for Analytics** |

**1. What will be the output of the following code? Read the description and fill in the blank. (If you are not sure, try the code in the console)**

**List Method**

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| Method | | | Description |
| **append()** | | | Add an item to the end of the list.  >>> a = [1, 2, 3]  >>> a.append(4)  >>> a   |  | | --- | | [1, 2, 3, 4] | |
| **extend()** | | | Extend the list by appending all the items from other list.    >>> a = [1, 2, 3]  >>> a.extend([4, 5, 6])  >>> a   |  | | --- | | [1, 2, 3, 4,5,6] | |
| **insert(position, value)** | | | Insert an item value at a given position. The first argument is the index of the element before which to insert, so a.interst(0,x)  inserts at the front of the list.  >>> a = [2, 4, 5]  >>> a.insert(0, 1)  >>> a   |  | | --- | | [1, 2, 4, 5] |   >>> a.insert(2, 3)  >>> a   |  | | --- | | [1, 2, 3, 4, 5] | |
| **remove(x)** | | | Remove the first item from the list whose value is equal to x    >>> a = ['BMW', 'BENZ', 'VOLKSWAGEN', 'AUDI', 'BMW']  >>> a.remove('BMW')  >>> a   |  | | --- | | ['BENZ', 'VOLKSWAGEN', 'AUDI'] | |
| **pop()** | | Remove the item at the given position in the list, and return it. If no index is specified, a.pop() removes and returns the last item in the list.  >>> a = [1, 2, 3, 4, 5]  >>> a.pop()   |  | | --- | | 5 |   >>> a   |  | | --- | | [1, 2, 3, 4] |   >>> a.pop()   |  | | --- | | 4 |   >>> a   |  | | --- | | [1, 2, 3] |   On the other hand, if you want to remove a specific element, you can enter the index of the element you want to remove in the pop () method.  >>> a = [1, 2, 3, 4, 5]  >>> a.pop(2)   |  | | --- | | 3 |   >>> a   |  | | --- | | [1, 2, 4, 5] | | |
| **index()** | index() method finds the given element in a [list](https://www.programiz.com/python-programming/list) and returns its position. If no elements match the data you are looking for, an error occurs.    >>> a = ['abc', 'def', 'ghi']  >>> a.index('def')   |  | | --- | | 1 |   >>> a.index('jkl')   |  | | --- | | error | | | |
| **count()** | count() method counts how many elements match the data entered as parameters.  >>> a = [1, 100, 2, 100, 3, 100]  >>> a.count(100)   |  | | --- | | 3 |   >>> a.count(200)   |  | | --- | | 0 | | | |
| **sort()** | Sort the elements in the list. Enter reverse = True for the parameter to sort in descending order; otherwise, sort in ascending order. Parameters that you specify by name, such as reverse = True, are also called keyword parameters.  >>> a = [3, 4, 5, 1, 2]  >>> a.sort()  >>> a   |  | | --- | | [1, 2, 3, 4, 5] |   >>> a.sort(reverse = True)  >>> a   |  | | --- | | [5,4,3,2,1] | | | |
| **reverse()** | Reverse the order of the elements in the list.    >>> a = [3, 4, 5, 1, 2]  >>> a.reverse()  >>> a   |  | | --- | | [2,1,5,4,3] | | | |

**2. Assume we have the following list:**

* + **Names = ["Jim", "Micheal", "Pam", "Dwight"]**

1. Remove “Dwight”
2. Return Length of List
3. Insert “Ryan” into the first location of list
4. Insert “Laura” into the last location of list
5. Count the number of occurrences for “Jim” in the list
6. Count total numbers of elements in the list.

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| **Code** |
| Names = ["Jim", "Micheal", "Pam", "Dwight"]  #1) Remove “Dwight”  Names.remove('Dwight')  #2) Return Length of List  print(len(Names))  #3) Insert “Ryan” into the first location of list  Names.insert(0,'Ryan')  #4) Insert “Laura” into the last location of list  Names.append('Laura')  #5) Count the number of occurrences for “Jim” in the list  print(Names.count('Jim'))  #6) Count total numbers of elements in the list.  print(len(Names)) |

**3. List with For loop**

1. Using for loop, find the negative number from the list\_num=[4,-1, 2, 3,-10,5]

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| **Code** |
| list\_num=[4,-1, 2, 3,-10,5]  NList=[]  for e in list\_num:  if e<0:  NList.append(e) |

**4. For Loop – Range function**

1. Write a for loop to print numbers in multiples of 2 till 10 (0,2,4,6,8,10)

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| **Code** |
| for i in range(0,10,2):  print(i) |

1. Write a for loop to print numbers in reverse order (5,4,3,2,1)

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| **Code** |
| for i in range(5,0,-1):  print(i) |

1. Write a for loop to print numbers in reverse order in multiples of 2 (10,8,6,4,2)

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| **Code** |
| for i in range(10,0,-2):  print(i) |

**5. For Loop – random module**

1. Using for loop and random module, create a random number list that comprises 5 random integer numbers ranges from -5 to 5. (e.g.,) list\_random=[-4,-2,0,1,2]

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| **Code** |
| import random  list\_random=[]  for i in range(5):  rand\_num=random.randint(-5,5)  list\_random.append(rand\_num)    print(list\_random) |

1. Using the list created above 2) and for loop, sum all of the elements in the random list.

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| **Code** |
| import random  list\_random=[]  s=0  for i in range(5):  rand\_num=random.randint(-5,5)  s=rand\_num+s  list\_random.append(rand\_num)    print(list\_random)  print(s) |