



CS Elective 4: Python Programming

Topic: Variables, Data Types & Lists

Lab. Activity 1

Design a Python program that will answer and simulate the following problems:

1. If $x = 7$ and $y = 3.14$, can we add the two given numbers?
If Yes 7 How?, If No 7 Why?

```
main.py
1 #Programmed by: <Manalabe, Patrick>
2 x = 7
3 y = 3.14
4 print(x + y)

Run: main
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/0
10.14
Process finished with exit code 0
```



Yes, we can, python automatically converts integers to floats unlike other programming language where you need to use typecast first before adding them.

2. If $x = y = z = \text{"Orange"}$, what will be its value if we add x and y ?

```
main.py
1 #Programmed by: <Manalabe, Patrick>
2
3 x = y = z = "Orange"
4 print(x + y)
```

Run: main

```
"C:\Users\Poorf\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poorf/Desktop/python/activity 1 2-19-2021/main.py"
OrangeOrange
Process finished with exit code 0
```

The output is OrangeOrange

3. If $a = 3$ and $g = 9.8$, how can we turn/change $a = 3.8$ and $g = 9$?



```
main.py x
1  #Programmed by: <Manalabe, Patrick>
2
3  a = 3
4  g = 9.8
5
6  a += .8
7  print(a)
8
9  a = 3.8
10 print(a)
11
12
13 print(g.__floor__())
14
15 g = 9
16 print(g)
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof
3.8
3.8
9
9
Process finished with exit code 0
```

4. What will be the output of the algorithm:

X = 5 #declared as global

Y = 10 #declared as global

Sum = X + Y

Print(Sum)

Function1 () #function 1

X = 10 #declared as local



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```
Y = 5                                #declared as local
Sum = X + Y
Print(Sum)

Function2                            #function 2
X = 5                                #declared as local
Y = 10                               #declared as global
Sum = X + Y
Print(Sum)

Print(Sum)
```



```
main.py x
1  #Programmed by: <Manalabe Patrick>
2
3  x = 5
4  y = 10
5  sum = x + y
6  print(sum)
7  def function1():
8      x = 5
9      y = 10
10     sum = x + y
11     print(sum)
12  def function2():
13     global x
14     global y
15     x = 5
16     y = 10
17     sum = x + y
18     print(sum)
19  print(sum)
```

function1()

Run: main x

"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Use
15
15
Process finished with exit code 0

5. Using the print() function, design an image using the "*" symbol, include the name or the title of the image as input string.



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- Initial car lists are: [Lexus, Porsche, Lincoln, Toyota, Mercedes-Benz]
- Add Kia at the end of the list

```
main.py x
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5
6 print(cars)
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/
['Lexus', 'Porsche', 'Lincoln', 'Toyota', 'Mercedes-Benz', 'Kia']
Process finished with exit code 0
```

- Add BMW at the beginning of the list

```
main.py x
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6
7 print(cars)
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/
['BMW', 'Lexus', 'Porsche', 'Lincoln', 'Toyota', 'Mercedes-Benz', 'Kia']
Process finished with exit code 0
```



d. Add Honda between Porsche and Lincoln

```
main.py x
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7
8 print(cars)

Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/Desktop/python/main.py"
['BMW', 'Lexus', 'Porsche', 'Honda', 'Lincoln', 'Toyota', 'Mercedes-Benz', 'Kia']
Process finished with exit code 0
```

e. Delete Lincoln and replace it with Hyundai

```
main.py x
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9
10 print(cars)

Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/Desktop/python/main.py"
['BMW', 'Lexus', 'Porsche', 'Honda', 'Hyundai', 'Toyota', 'Mercedes-Benz', 'Kia']
Process finished with exit code 0
```

f. Replace the last car with Subaru



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```
main.py
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11
12 print(cars)
```

```
Run: main
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/Desktop/python/
['BMW', 'Lexus', 'Porsche', 'Honda', 'Hyundai', 'Toyota', 'Mercedes-Benz', 'Subaru']
Process finished with exit code 0
```

g. Find the middle of the list and insert Audi

```
main.py
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 print(cars)
```

```
Run: main
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/Desktop/python/activ
['BMW', 'Lexus', 'Porsche', 'Honda', 'Audi', 'Hyundai', 'Toyota', 'Mercedes-Benz', 'Subaru']
Process finished with exit code 0
```

h. Count the number of cars in the list and display them in order



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```
main.py x
1 #Programmed by: <Manalabe_Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 total = int(len(cars))
15 print(f"Total cars: {total}")
16 for car in cars:
17     print(car)

for car in cars

Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Use
Total cars: 9
BMW
Lexus
Porsche
Honda
Audi
Hyundai
Toyota
Mercedes-Benz
Subaru

Process finished with exit code 0
```

- i. Sort the list in alphabetical order



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```
main.py x
1 #Programmed by: <Manalabe_Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15
16 print(sortedList)
17
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:\Users\Poof\Desktop\python\activ
['Audi', 'BMW', 'Honda', 'Hyundai', 'Lexus', 'Mercedes-Benz', 'Porsche', 'Subaru', 'Toyota']
Process finished with exit code 0
```

j. Display the list in descending order

```
main.py x
1 #Programmed by: <Manalabe_Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15 descending = sorted(cars, reverse=True)
16
17 print(descending)
18
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:\Users\Poof\Desktop\python\activity 1
['Toyota', 'Subaru', 'Porsche', 'Mercedes-Benz', 'Lexus', 'Hyundai', 'Honda', 'BMW', 'Audi']
Process finished with exit code 0
```



k. Determine the location of Honda

```
#main.py
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15 descending = sorted(cars, reverse=True)
16
17 Honda = cars.index("Honda")
18
19 print(Honda)
20
```

Run: main x

"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:\Users\Poof\Desktop\python\activity 1 2-19-2021\m
3
Process finished with exit code 0

l. Determine the location of Hyundai



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```
main.py x
1  #Programmed by: <Manalabe, Patrick>
2
3  cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4  cars.append("Kia")
5  cars.insert(0, "BMW")
6  cars.insert(3, "Honda")
7  cars.pop(4)
8  cars.insert(4, "Hyundai")
9  cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15 descending = sorted(cars, reverse=True)
16
17 Hyundai = cars.index("Hyundai")
18 Honda = cars.index("Honda")
19
20 print(Hyundai)
21
```

Run: main x

"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/User
5

Process finished with exit code 0

m. What will be the output if we find Lincoln and it is not in the list?

n. Determine the car as the last element in the list



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```
main.py x
1  #Programmed by: <Manalabe, Patrick>
2
3  cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4  cars.append("Kia")
5  cars.insert(0, "BMW")
6  cars.insert(3, "Honda")
7  cars.pop(4)
8  cars.insert(4, "Hyundai")
9  cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15 descending = sorted(cars, reverse=True)
16
17 Hyundai = cars.index("Hyundai")
18 Honda = cars.index("Honda")
19 Lincoln = cars.index("Lincoln ")
20
21 print(Lincoln)
22
```

```
Run: main x
"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:/Users/Poof/Desktop/python/activ
Traceback (most recent call last):
  File "C:\Users\Poof\Desktop\python\activity 1 2-19-2021\main.py", line 19, in <module>
    Lincoln = cars.index("Lincoln ")
ValueError: 'Lincoln ' is not in list

Process finished with exit code 1
```

- o. Delete all the list and display a null or an empty list



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```
main.py
1 #Programmed by: <Manalabe, Patrick>
2
3 cars = ["Lexus", "Porsche", "Lincoln", "Toyota", "Mercedes-Benz"]
4 cars.append("Kia")
5 cars.insert(0, "BMW")
6 cars.insert(3, "Honda")
7 cars.pop(4)
8 cars.insert(4, "Hyundai")
9 cars.pop()
10 cars.append("Subaru")
11 middle = int(len(cars) / 2)
12 cars.insert(middle, "Audi")
13
14 sortedList = sorted(cars)
15 descending = sorted(cars, reverse=True)
16
17 Hyundai = cars.index("Hyundai")
18 Honda = cars.index("Honda")
19 boom = cars.clear() #THIS
20 print(boom)
21
22 cars = [] #op THIS
23 print(cars)
```

Run: main

"C:\Users\Poof\Desktop\python\activity 1 2-19-2021\venv\Scripts\python.exe" "C:\Users\Poof\Desktop\python\activity 1 2-19-2021/main.py"

None
[]

Process finished with exit code 0

Instructions:

- Include as comment your full name on every code that you made using the format: #Programmed by: <Last Name, First Name>
- Make screenshots of your codes and the corresponding output as you Build and Run your programs.
- Same screenshots with another programmer will divide your score based on how many of you who has the same screenshots.
- Submit your work in PDF format via GC-LAMP. Only one document file per student.