AI Python Extra Practice Examples Term 1

1. Python program to find the largest number among the three input numbers
```
a=int(input("Enter a:"))
b=int(input("Enter b:"))
c=int(input("Enter b:"))
if a>b and a>c:
        print("a is largest")
elif b>a and b>c:
        print("b is largest")
else:
        print("c is largest")
```

2. Python program to find the factorial of a number provided by the user.
```
num = int(input("Enter a number: "))
fact = 1
for i in range(1,num + 1):
     factorial = factorial*i
print("The factorial of",num,"is",factorial)
```

3. Multiplication table (from 1 to 10) in Python
```
num = int(input("Display multiplication table of? "))
for i in range(1, 11):
  print(num, 'x', i, '=', num*i)
```

4. Python program to check if the input number is odd or even.
```
num = int(input("Enter a number: "))
if (num % 2) == 0:
  print("Even")
else:
  print("Odd")
```

5. # Python program to check if year is a leap year or not
```
 year = int(input("Enter a year: "))
if year%4==0:
        print("Leap Year")
else:
        print("Not a leap year")
```

6. # Python Program to calculate the square root
```
num = float(input('Enter a number: '))
sqrt = num ** 0.5
print(sqrt)
```

7. Python program to swap two variables

```
x = input('Enter value of x: ')
y = input('Enter value of y: ')
print(x,y)
temp = x
x = y
y = temp
print(y,x)
```

8. Create a NumPy ndarray Object

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5])
print(arr)
```

9. 0-D Arrays

```
import numpy as np
arr = np.array(42)
print(arr)
```

10. 1-D Arrays

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5])
print(arr)
```

11. 2-D Arrays

```
import numpy as np
arr = np.array([[1, 2, 3], [4, 5, 6]])
print(arr)
```

12. Access Array Elements

```
import numpy as np
arr = np.array([1, 2, 3, 4])
print(arr[0])
```

13. Slice elements from index 1 to index 5 from the following array:

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[1:5])
```

14. Slice elements from index 4 to the end of the array:

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[4:])
```

15. Slice elements from the beginning to index 4 (not included):

```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[:4])
```
16. Slice from the index 3 from the end to index 1 from the end:
```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[-3:-1])
```
17. Return every other element from index 1 to index 5:
```
import numpy as np
arr = np.array([1, 2, 3, 4, 5, 6, 7])
print(arr[1:5:2])
```
18. Print the shape of a 2-D array:
```
import numpy as np
arr = np.array([[1, 2, 3, 4], [5, 6, 7, 8]])
print(arr.shape)
```
19. Create a simple Pandas Series from a list:
```
import pandas as pd
a = [1, 7, 2]
myvar = pd.Series(a)
print(myvar)
```
20. Create your own labels:
```
import pandas as pd
a = [1, 7, 2]
myvar = pd.Series(a, index = ["x", "y", "z"])
print(myvar)
```
21. Create a simple Pandas DataFrame:
```
import pandas as pd
data = {
  "calories": [420, 380, 390],
  "duration": [50, 40, 45]
}
#load data into a DataFrame object:
df = pd.DataFrame(data)
print(df)
```
22. Return row 0 and 1:
```
#use a list of indexes:
print(df.loc[[0, 1]])
```
23. Print the DataFrame without the to_string() method:

```
import pandas as pd
df = pd.read_csv('data.csv')
print(df)
```
24. **Get a quick overview by printing the first 10 rows of the DataFrame:**
```
import pandas as pd
df = pd.read_csv('data.csv')
print(df.head(10))
```
25. **Print the first 5 rows of the DataFrame:**
```
import pandas as pd
df = pd.read_csv('data.csv')
print(df.head())
```
26. **Replace NULL values with the number 130:**
```
import pandas as pd
df = pd.read_csv('data.csv')
df.fillna(130, inplace = True)
print(df.to_string())
```

27. **There are 25 students in a class. Their heights are given below. Write a Python Program to find the mean. heights → 145, 151, 152, 149, 147, 152, 151,149, 152, 151, 147, 148, 155, 147,152,151, 149,145, 147, 152,146, 148, 150, 152, 151**

```
import statistics
height = [145,151, 152, 149, 147, 152, 151,149,
          152, 151, 147, 148, 155, 147,152,151,
          149,145, 147, 152,146, 148, 150, 152, 151]
print ("Mean height of students", statistics.mean(height))
```

OUTPUT

```
Mean height of students 149.56
```

28. **There are 25 students in a class. Their heights are given below. Write a Python Program to find the median. heights → 145, 151, 152, 149, 147, 152, 151,149, 152, 151, 147, 148, 155, 147,152,151, 149,145, 147, 152,146, 148, 150, 152, 151**

```
import statistics
height = [145,151, 152, 149, 147, 152, 151,149,
          152, 151, 147, 148, 155, 147,152,151,
          149,145, 147, 152,146, 148, 150, 152, 151]
print ("Median of height of students", statistics.median(height))
```

OUTPUT

```
Median of height of students 150
```

29. Write a program to find the mode (heights → 145,151, 152, 149, 147, 152, 151,149, 152, 151, 147, 148, 155, 147,152,151, 149, 145, 147, 152,146, 148, 150, 152, 151)

```
import statistics
height = [145,151, 152, 149, 147, 152, 151,149,
          152, 151, 147, 148, 155, 147,152,151,
          149,145, 147, 152,146, 148, 150, 152, 151]
print ("Mode of height of students", statistics.mode(height))
```

OUTPUT

```
Mode of height of students 152
```

30. Write a program to find the variance and standard deviation. (heights → 145,151, 152, 149, 147, 152, 151,149, 152, 151, 147, 148, 155, 147,152,151, 149,145, 147, 152,146, 148, 150, 152, 151)

```
import statistics
height = [145,151, 152, 149, 147, 152, 151,149,
          152, 151, 147, 148, 155, 147,152,151,
          149,145, 147, 152,146, 148, 150, 152, 151]
print ("Variance in the height of students", statistics.variance(height))
print ("Standard Deviation", statistics.stdev(height))
```

OUTPUT

```
Variance in the height of students 6.756666666666667
Standard Deviation 2.5993588953175872
```