

```
HW1.py -- FE520

1 # 1 => Print
2
3 # 1. Define an arbitrary string variable, and print it.
4 numOfCard = "Fifty Two"
5 print(numOfCard)
6
7 # 2. Define a string (I'm a student), print it.
8 student = "I'm a student"
9 print(student)
10
11 # 3. Define a string:
12 # (How do you think of this course?
13 # Describe your feeling of this course)
14 # print it in multiple line.
15 myFeelings = "FE520,\nAn amazing course taught in a very simple manner.\nThis is my first elective from FE."
16 print(myFeelings)
17
18 print("\n-----\n")
19 # 2=> Operator
20
21 a = 100
22 b = 9
23
24 # 1. Assign the result of a+b to c, print c out.
25 c = a+b
26 print(c)
27
28 # 2. Print the result of a/b.
29 print(a/b)
30
31 # 3. Print the integer part of a/b. (Hint: modulo operations)
32 print((a//b))
33
34 # 4. Print the remainder part of a/b. (Hint: modulo operations)
35 print(a % b)
36
37 # 5. Print the result of ab.
38 print(a*b)
39
40 # 6. Determining if a is unequal to b and print the True/False using logic operators.
41 print(a == b)
42
43 # 7. Determining if a is greater to b and print the True/False using logic operators.
44 print(a > b)
45
46 print("\n-----\n")
47 # 3=> List Practice
48
49 # 1. Define a list Name it List A, whose items should include integer, float, and string. Please notice the length of the list should be greater than 5.
50 List_A = [22, 14.7, "Prashant", "Mall", 10459371, "Go Ducks"]
51
52 # 2. Using extend and append to add another list (Name it List B) to List A, conclude the difference.
53 List_B = [2, 16, 2022]
54 List_A.extend(List_B)
55 print(List_A)
56 List_A.append(List_B)
57 print(List_A)
58
59 # 3. Insert a string ('FE520') to the second place of List A, and delete it after that.
60 List_A.insert(2, "FE520")
61 print(List_A)
62 List_A.remove("FE520")
63 print(List_A)
64
65 # 4. Return and delete the last element in the List A, and print the new list.
66 lastElem = List_A.pop(-1)
67 print(List_A)
68
```

```
HW1.py — FE520
HW1.py > ...
69 # 5. Return a new list (Name is List C), slicing the List A from the 3rd element to the end.
70 List_C = List_A[3:]
71 print(List_C)
72
73 # 6. Double the size of List C using '+'.
74 List_C = List_C + List_C
75 print(List_C)
76
77 # 7. Reverse your sequence of List C.
78 List_C.reverse()
79 print(List_C)
80
81 print("\n-----\n")
82 # 4 => Practice Dictionary
83
84 # 1. Define a string of 'python is an interpreted dynamic programming language'
85 newString = 'python is an interpreted dynamic programming language'
86
87 # 2. Create a list (list A) of single-character strings out of the above string in 1 (e.g., 'hello' -> ['h', 'e', 'l', 'l', 'o']).
88 A = list(newString)
89
90 # 3. Write a loop to count the number of each unique character into dictionary, where your keys are characters in the list A, and value is the
91 dictCount = {}
92 for char in newString:
93     if char in dictCount:
94         dictCount[char] += 1
95     else:
96         dictCount[char] = 1
97 print(dictCount)
98
99 # 4. Print the characters which only show once (count=1) in the output dictionary (Hint: use loop and if statement).
100 for char in dictCount:
101     if dictCount[char] == 1:
102         print(char)
103
104 print("\n-----\n")
105 # 5 => Loop Practice: Sum (15 pts)
106
107 # Write a loop for calculate the average of a list.
108 # For example: if you have a list A = [1, 2, 3, 4, 5, 6], after your loop calculation,
109 # you need to get a total num equals to 3.5.
110
111 List_Loop = [1, 2, 3, 4, 5, 6, 7, 8, 9, 8, 7, 6, 5, 4, 3, 2, 1]
112 sum = 0
113 for elem in List_Loop:
114     sum += elem
115 average = sum/len(List_Loop)
116 print(average)
117
118 print("\n-----\n")
119 # 6 => Loop Practice: Gradient Decent
120
121 # Dataset
122 x = [0.18, 1.0, 0.92, 0.07, 0.85, 0.99, 0.87]
123 y = [109.85, 155.72, 137.66, 76.17, 139.75, 162.6, 151.77]
124
125 # Variables
126 w = 0
127 c = 0
128 L = 0.001
129 number_of_iterations = 200
130
131 Dw = [0]*len(x)
132 Dc = [0]*len(x)
133
134 y_pred = [0]*len(x)
135
136 for index in range(0, number_of_iterations):
```

Python 3.9.10 64-bit 0 0 0 Prashant Live Share Ln 1, Col 1 Spaces: 4 UTF-8 LF Python k1te: ready Prettier

HW1.py — FE520

Get Started HW1.py x

HW1.py > ...

```
135
136 for index in range(0, number_of_iterations):
137     for i in range(len(x)):
138         y_pred[i] = (x[i]*w)+c
139         Dw[i] = x[i]*(y_pred[i] - y[i])
140         Dc[i] = y_pred[i]-y[i]
141
142     totalSum_dw = 0
143     for sumDw in Dw:
144         totalSum_dw += sumDw
145
146     totalSum_dc = 0
147     for sumDc in Dc:
148         totalSum_dc += sumDc
149
150     dw = totalSum_dw/len(Dw)
151     dc = totalSum_dc/len(Dc)
152
153     w = w - L * dw
154     m = w
155
156     c = c - L * dc
157
158 print(w)
159 print(c)
160
```

HW1.py

```
+ FE520 python3 HW1.py
Fifty Two
I'm a student
FE520,
An amazing course taught in a very simple manner.
This is my first elective from FE.

-----

109
11.111111111111111
11
1
900
False
True

-----

[22, 14.7, 'Prashant', 'Mall', 10459371, 'Go Ducks', 2, 16, 2022]
[22, 14.7, 'Prashant', 'Mall', 10459371, 'Go Ducks', 2, 16, 2022, [2, 16, 2022]]
[22, 14.7, 'FE520', 'Prashant', 'Mall', 10459371, 'Go Ducks', 2, 16, 2022, [2, 16, 2022]]
[22, 14.7, 'Prashant', 'Mall', 10459371, 'Go Ducks', 2, 16, 2022, [2, 16, 2022]]
[22, 14.7, 'Prashant', 'Mall', 10459371, 'Go Ducks', 2, 16, 2022]
['Mall', 10459371, 'Go Ducks', 2, 16, 2022]
['Mall', 10459371, 'Go Ducks', 2, 16, 2022, 'Mall', 10459371, 'Go Ducks', 2, 16, 2022]
[2022, 16, 2, 'Go Ducks', 10459371, 'Mall', 2022, 16, 2, 'Go Ducks', 10459371, 'Mall']

-----

{'p': 3, 'y': 2, 't': 3, 'h': 1, 'o': 2, 'n': 6, ' ': 6, 'i': 4, 's': 1, 'a': 5, 'e': 4, 'r': 4, 'd': 2, 'm': 3, 'c': 1, 'g': 4, 'l': 1, 'u': 1}
h
s
c
l
u

-----

4.764705882352941

-----

17.724810647355827
22.97599012903927
+ FE520
```