Python Assignment Report

This assignment covers operators, strings, and lists through a variety of tasks on basic fundamentals of Python. The arithmetic, comparison, and logical operations in the operators portion, which helped me better grasp how Python handles conditions and calculations. The string exercises featured experimenting with string formatting and substring searches, as well as discovering string lengths, reversing strings, and changing the string cases. In addition to adding, deleting, sorting, and slicing list parts All things considered, the assignment strengthened my comprehension of Python's fundamental features and enhanced my capacity to produce clear, concise code.

Approach

1.Operators

- **Question 1 Arithmetic Operators :-** In this question I wrote a code which takes 2 inputs from the user to carry out several fundamental arithmetic operations, including addition, subtraction, multiplication, division, exponential and floor division.

  Code:-

```
a=int(input("Enter the first number:"))  #inputs taken from user
b=int(input("Enter the second number:"))
print("Addition:",a+b) #printing the inputs after each operation
print("Substraction:",a-b)
print("Multiplication:",a*b)
print("Division:",(round(a/b,2)))
print("Modulus:",a%b)
print("Exponential:",a**b)
```

```
print("Floor Division:",a//b)
```

- **Question 2 Comparison Operators :-** In this question the user input is compared if the first number is greater, less than or equal to the second number using the if else statement.

  Code:-

```
a=int(input("Enter the first number:")) #inputs taken from user
b=int(input("Enter the second number:"))
if a>b: #checking if the number in greater or not
        print("First number is greater than the second number") # if greater than this will be printed
elif a==b:
        print("Both number are equal") #if the number is equal than this will be printed
else:
        print("The first number is less than the second number") # if the number is less than, than this will be printed
```

- **Question 3 Logical Operators :-** In this question the user enter three boolean input and the input is compared and printed with the following logical operator AND, OR & NOT

  Code:-

```
a=(input("Enter the first value:")).strip().lower()=="true" #inputs taken from user
b=(input("Enter the second vale:")).strip().lower()=="true" #.strip() is used to clear any whitespaces
```

```
c=(input("Enter the third value:")).strip().lower()=="true" #.lower() is used because boolean value is True or False so with this lower letters will also be accepted
r1=a and b and c #logical operators
r2=a or b or c
r3= not a
r4= not b
r5= not c
print(f"The AND operator result:{r1}") #printng logical operators using f string
print(f"The OR operator result:{r2}")
print(f"The NOT operator result:{r3}")
print(f"The NOT operator result:{r4}")
print(f"The NOT operator result:{r5}")
```

2.Strings

- **Question 4 String Manipulation :-** In this question the user inputs string and the code would perform various tasks such as finding the length of the string, first and last letter,reversing it, and changing its case.

  Code:-

```
a=input("Enter a string:") #inputs taken from user
print(len(a)) #printing lenght of input
print(a[:1]+a[-1:]) #printing first and last letter of input
print(a[::-1]) #printing reverse of input
print(a.upper()) #printing inupt in uppercase
print(a.lower()) #printing input in lowercase
```

- **Question 5 String formatting :-** In this question the user inputs their name and age and generates a personalised message.

  Code:-

  ```
  a=input("Enter Your Name:") #inputs taken from user
  b=input("Enter Your Age:")
  print(f"Hello {a}, you are {b} years old.") #printing input using f string
  ```

- **Question 6 Substring Search :-** In this question the user inputs a sentence and the word which needs to be found in the sentence. Using Find search method and if else statement to find the word.

  Code:-

  ```
  a=input("Enter a sentence:") #inputs taken from user
  b=input("Enter the word:") #inputs taken from user which would be used to search
  c=a.find(b) #.find is used to search the input b from input a
  if c !=-1: #this used to check if the word is found or not
      print(f"The word {b} found at {c} index position") #if found than this will be printed
  else:
      print(f"The {b} word not found") #if not found than this will be printed
  ```

3.List

- **Question 7 List Operation :-** In this question FOR loop is used to get user input of 5 numbers and f string to increment the i value while also taking user input. Using append the user input is appended to the list, then using the sum

function prints the total of list and max, min which prints the greatest and smallest number of the list.

Code:-

```
a=[] #empty list created
for i in range(5): #loops the input 5 times
        b=int(input(f"Enter the number {i+1}:")) # imput is being looped 5 times and also incrementing i value by +1
        a.append(b) #the input is then appended to the empty list
c=sum(a) #sums the list
d=max(a) #takes the greatest number
e=min(a) #takes the smallest number
print(f"List:{a}") #prints the list using f string
print(f"The total is:{c}") #prints the total of list
print(f"The largest number:{d}") #print the largest number
print(f"The smallest number:{e}") #print the smallest number
```

- **Question 8 List Manipulation :-** In this question the same method is used as question 7 to take user input but in string as fruit names and then the input is appended to the list. Adding and removing a fruit from the list.

  Code:-

```
a=[] #empty list created
for i in range(5): #loops the input 5 times
        b=input(f"Enter Your Favorite Fruit {i+1}:") # imput is being looped 5 times and also incrementing i value by +1
        a.append(b) #the input is then appended to the empty list
print(f"The First list:{a}") #prints the list
c=input("Enter the other fruit you want to add:") #enter the other value
a.append(c) #adds the other value to lisst
```

```
print(f"The added fruit list:{a}") #prints the added value list
d=a.pop(1) #removes a value from list
print(f"The removed and updated list of fruits:{a}") # the updated list
```

- **Question 9 Sorting A List :-** Same method as question 7 to take user input and using sort & sort(reverse=true) to print ascending and descending order of the list.

  Code:-

```
a=[] #empty list created
for i in range(5): #loops the input 5
        b=input(f"Enter the number {i+1}:") # imput is being looped 5 times and also incrementing i value by +1
        a.append(b) #the input is then appended to the empty list
print(f"The Number list:{a}") #prints the list
c=a.sort() #used to sort the list in ascending
print(f"Ascending Sorted list:{a}")  #prints the ascending list
d=a.sort(reverse=True) #used to sort the list in descending order
print(f"Descending Sorted list:{a}") #prints the descending list
```

- **Question 10 List Slicing :-** In this question the list is sliced in 2 parts first 5 values printed first and the second the last 5 values is printed.

  Code:-

```
a=["1","2","3","4","5","6","7","8","9","10"]
b=a[:5] #used to print first 5 values
c=a[-5:] # used  to print the last five values
d=a[2:8] #used to print values between 2 and 8
print(b)
print(c)
```

```
print(d)
```

- **Question 11 Nested List (Bonus Question) :-** In this question the user inputs 3 students name and appends it to the list and using the nested list the user inputs the 3 subjects mark of the student. This then prints the students name and their marks.

  Code:-

```
a=[]  #empty list created
for i in range(3): #loops the input 3 times
        b=input("Enter student name: ") #Student name is inputed
        c=[] #nested list is created
        for j in range(3): #loops the input 3 times
        d= float(input(f"Enter mark for {b}'s subject {j+1}: ")) # imput is being looped 3 times and also incrementing j value by +1
        c.append(d) #The d inputs are append to list c
        a.append([b,c]) #The input b and list c are append to list a
for i in a: #loops the list
        average = sum(i[1]) / len(i[1]) #Takes average of all 3 students with their 3 subjects
        print(f"{i[0]}'s average score is:{average}") #prints the student name and their average score
```

Key Learning

1. Operators: I learned how to effectively carry out a variety of calculations and checks using arithmetic, comparison, and logical operators.

2. String Manipulation: By investigating various approaches to handling and processing string data, I enhanced my proficiency in manipulating strings using built-in Python functions.
3. List Operations: I became more familiar with list operations, such as how to make, edit, sort, and cut lists. I also learned how to work with nested structures, which are used to store more complicated data.

GitHub Link

https://github.com/KRiZZ85/Python-assignment-1