

Advanced Programming for  
Python  
Assignment#1

Daud Raza  
401920

## 1. Number Swapping

Code:

```
1. a = input("Enter First Number")
2. b = input("Enter Second Number")
3. # The numbers have been assigned to new variables for swapping
4. c = a
5. d = b
6. # The numbers are swapped in the next command
7. a = d
8. b = c
9. print(a)
10. print(b)
```

Output:

```
1. runcell(0, 'F:/Masters/Semester 1/Advanced Programming for
Python/Assignment/Assignment#1/Swap_Numbers.py')
2. Enter First Number 1
3. Enter Second Number 2
4. 2
5. 1
```

## 2. Factorial of a Number

Code:

```
1. # Defining a function for factorial. Had to understand and lookup recursion for
2. # this example.
3. a = int(input("Enter the Number for Factorial: "))
4. def factorial(x):
5.     if x==1:
6.         return 1
7.     else:
8.         return(x*factorial(x-1))
9. print(factorial(a))
```

Output:

```
1. runcell(0, 'F:/Masters/Semester 1/Advanced Programming for
Python/Assignment/Assignment#1/Factorial_Calculation.py')
2. Enter the Number for Factorial: 5
3. 120
4.
5. runcell(0, 'F:/Masters/Semester 1/Advanced Programming for
Python/Assignment/Assignment#1/Factorial_Calculation.py')
6. Enter the Number for Factorial: 7
7. 5040
```

### 3. Fibonacci Sequence

Code:

```
1. # Going to print the first 20 digits of the fibonacci sequence
2. a = 0
3. b = 1
4. for i in range (0,20):
5.     c = a + b
6.     a = b
7.     b = c
8.     i += 1
9.     print(c)
```

Output:

```
1. runcell(0, 'F:/Masters/Semester 1/Advanced Programming for
   Python/Assignment/Assignment#1/Fibonacci_Sequence.py')
2. 1
3. 2
4. 3
5. 5
6. 8
7. 13
8. 21
9. 34
10. 55
11. 89
12. 144
13. 233
14. 377
15. 610
16. 987
17. 1597
18. 2584
19. 4181
20. 6765
21. 10946
```

### 4. String Operations

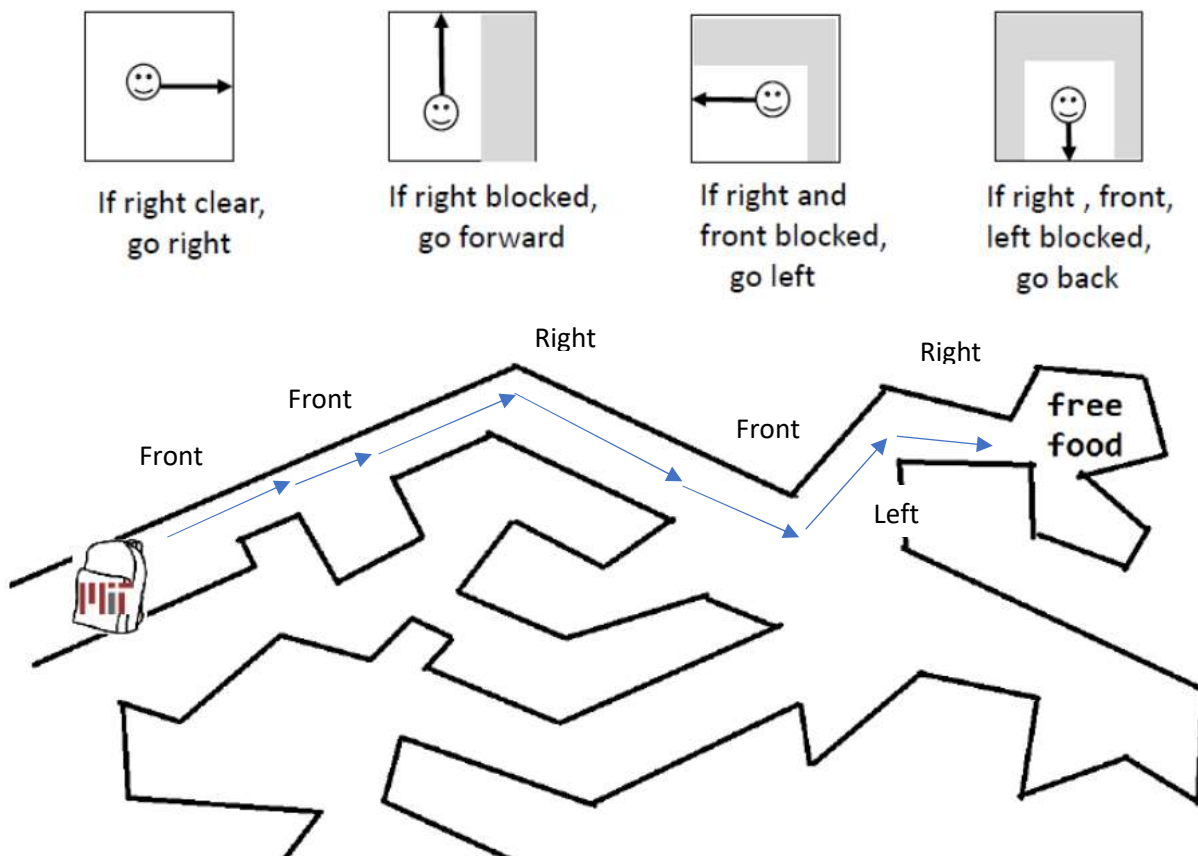
Code:

```
1. name = "Daud Raza"
2. # Checking len() command
3. print(len(name))
4. # Checking substring function
5. print(name[0:4])
6. print(name[5:9])
7. print(name[0:9:2])
8. # Checking concatenation of strings
9. field = "Engineering"
10. task = name + " works in " + field
11. print(task)
```

Output:

```
1. runfile('F:/Masters/Semester 1/Advanced Programming for
Python/Assignment/Assignment#1/String_test.py', wdir='F:/Masters/Semester 1/Advanced
Programming for Python/Assignment/Assignment#1')
2. 9
3. Daud
4. Raza
5. Du aa
6. Daud Raza works in Engineering
```

## 5. Pathfinding for Free Food



Code:

```
1. free_food = 0
2. while free_food == 0:
3.     end = input("Are you at the location of the Free Food? Type Y/N ")
4.     if end == "Y" or end == "y":
5.         print("Congrats! you have arrived!")
6.         break
7.     elif end == "N" or end == "n":
```

```

8.         move_right = input("Is the location towards the right? Type Y/N ")
9.         if move_right == "Y" or move_right == "y":
10.            print("Move towards the right")
11.        end
12.        if end == "Y" or end == "y":
13.            print("Congrats! you have arrived!")
14.            break
15.        elif move_right == "N" or move_right == "n":
16.            move_forward = input("Is the location towards the front? Type Y/N ")
17.            if move_forward == "Y" or move_forward == "y":
18.                print("Move forward")
19.            end
20.            if end == "Y" or end == "y":
21.                print("Congrats! you have arrived!")
22.                break
23.            elif move_forward == "N" or move_forward == "n":
24.                move_left = input("Is the location towards the left? Type Y/N ")
25.                if move_left == "Y" or move_left == "y":
26.                    print("Move towards the left")
27.                end
28.                if end == "Y" or end == "y":
29.                    print("Congrats! you have arrived!")
30.                    break
31.                elif move_left == "N" or move_left == "n":
32.                    print("All paths are blocked, move back!")

```

Output:

```

1. runcell(0, 'F:/Masters/Semester 1/Advanced Programming for
   Python/Assignment/Assignment#1/Path_finding.py')
2. Are you at the location of the Free Food? Type Y/N n
3. Is the location towards the right? Type Y/N n
4. Is the location towards the front? Type Y/N y
5. Move forward
6. Are you at the location of the Free Food? Type Y/N n
7. Is the location towards the right? Type Y/N n
8. Is the location towards the front? Type Y/N y
9. Move forward
10. Are you at the location of the Free Food? Type Y/N n
11. Is the location towards the right? Type Y/N y
12. Move towards the right
13. Are you at the location of the Free Food? Type Y/N n
14. Is the location towards the right? Type Y/N n
15. Is the location towards the front? Type Y/N y
16. Move forward
17. Are you at the location of the Free Food? Type Y/N n
18. Is the location towards the right? Type Y/N n
19. Is the location towards the front? Type Y/N n
20. Is the location towards the left? Type Y/N y
21. Move towards the left
22. Are you at the location of the Free Food? Type Y/N n
23. Is the location towards the right? Type Y/N y
24. Move towards the right
25. Are you at the location of the Free Food? Type Y/N y
26. Congrats! you have arrived!

```