

Problem 1

Code:

```
def fibonacci(num):
    a = 0
    b = 1
    num_list = [0,1]
    if num < 0:
        return('Invalid Input')
    elif num == 0:
        return a
        num_list.append(a)
    elif num == 1:
        return b
        num_list.append(b)
    else:
        for i in range (2, num):
            total = a + b
            a = b
            b = total
            num_list.append(b)
        return num_list

num = int(input('How many numbers do you want inside the sequence:\n'))
print(fibonacci(num))
```

Output:

```
-----
How many numbers do you want inside the sequence:
5
[0, 1, 1, 2, 3]
>>> |
```

Problem 3

Code:

```

def setup(top_cities):
    random.shuffle(top_cities)

player1 = input("Enter your name Player 1:\n")
player2 = input("Enter your name Player 2:\n")

top_cities = ['Cape Town', 'Cape Town', 'Stone Town',
              'Stone Town', 'Lamu', 'Lamu', 'Essaouira',
              'Essaouira', 'Djenné', 'Djenné', 'Bahir Dar',
              'Bahir Dar', 'Luxor', 'Luxor', 'Windhoek',
              'Windhoek', 'Nairobi', 'Nairobi', 'Agadir',
              'Agadir']

enter = input("Press enter to start the game\n")

score1 = 0
score2 = 0

quit_game = 0

while (len(top_cities) != 0) or (quit_game != 1):
    setup(top_cities)
    quit_game = int(input("Do you want to quit (yes=1, no=0)?\n"))

    if quit_game == 1:
        sys.exit()

    print(top_cities)
    ready = input("Press any key if you've read and memorised as much of the list as possible\n")

    for i in range(0, 50):
        print(" ")

    index1 = int(input("Enter the index of a city {}:\n".format(player1)))
    print(top_cities[index1])

    same_city1 = int(input("""Guess where the repeat of that city is:
(give the index number):\n"""))
    print(top_cities[same_city1])

    if (top_cities[same_city1] == top_cities[index1]):
        score1 = score1 + 1
        top_cities.pop(index1)
        top_cities.pop(same_city1-1)

```

```

elif (top_cities[same_city1] == top_cities[index1]):
    score1 = score1 + 1
    top_cities.pop(index1-1)
    top_cities.pop(same_city1)
else:
    score1=score1+0

print(score1)

print(top_cities)

ready = input("Press any key if you've read and memorised as much of the list as possible")

for i in range(0, 50):
    print(" ")

index2 = int(input("Enter the index of a city {}:\n".format(player2)))
print(top_cities[index2])

same_city2 = int(input("Guess where the repeat of that city is:
(give the index number, {}):\n".format(player2)))
print(top_cities[same_city2])

if top_cities[same_city2] == top_cities[index2]:
    score2 = score2 + 1
    top_cities.pop(index2)
    top_cities.pop(same_city2-1)

elif (top_cities[same_city2] == top_cities[index2]):
    score2 = score2 + 1
    top_cities.pop(index2-1)
    top_cities.pop(same_city2)

else:
    score2=score2+0

print(score2)

if score1 > score2:
    print("{} wins! {}Score={}, {}Score={}".format(player1, player1, score1, player2, score2))
elif score1 < score2:
    print("{} wins! {}Score={}, {}Score={}".format(player2, player2, score2, player1, score1))
elif score1 == score2:
    print("Tie! {}Score={}, {}Score={}".format(player1, score1, player2, score2))

```

Output:

```

\problem5.py
Enter your name Player 1:
a
Enter your name Player 2:
b
Press enter to start the game

Do you want to quit (yes=1, no=0)?
0
['Nairobi', 'Nairobi', 'Bahir Dar', 'Djenné', 'Cape Town', 'Lamu', 'Luxor', 'Agadir', 'Stone
Town', 'Luxor', 'Djenné', 'Lamu', 'Cape Town', 'Windhoek', 'Essaouira', 'Stone Town', 'Agadi
r', 'Essaouira', 'Bahir Dar', 'Windhoek']
Press any key if you've read and memorised as much of the list as possible a1

```

Enter the index of a city a:

Enter the index of a city a:

Cape Town

Guess where the repeat of that city is:

(give the index number):

Lamu

'Nairobi', 'Nairobi', 'Bahir Dar', 'Djenné', 'Cape Town', 'Lamu', 'Luxor', 'Agadir', 'Stone Town', 'Luxor', 'Djenné', 'Lamu', 'Cape Town', 'Windhoek', 'Essaouira', 'Stone Town', 'Agadir', 'Essaouira', 'Bahir Dar', 'Windhoek']

Press any key if you've read and memorised as much of the list as possible b

Ln: 20346 Col:

CREATE THE INDEX OF A STEP BY



```
Enter the index of a city b:
```

```
Enter the index of a city b:
```

```
1
```

```
Nairobi
```

```
Guess where the repeat of that city is:
```

```
(give the index number, b):
```

```
2
```

```
Bahir Dar
```

```
0
```

```
Do you want to quit (yes=1, no=0)?
```

```
0
```

```
Do you want to quit (yes=1, no=0)?
```

```
1
```

```
>>>
```

Problem 4:

Code:

```
active = True
i = 0

num_list = []

def end_game(num, i):
    return("Number of inputs = ", i, 'Sum of your inputs = ', sum(num_list))

def out_of_range(num):
    return("Try again\n")

def not_odd(num):
    num_list.append(num)
    return("Even", num_list)

def not_even(num):
    num_list.append(num)
    return("Odd", num_list)

while active:
    num = int(input("Enter an integer between 1 and 10, or type -1 to quit:\n"))
    if num == -1:
        print(end_game(num, i))
        break
    elif num > 10 or num < 1:
        print(out_of_range(num))
    elif num % 2 == 0:
        i = i + 1
        print(not_odd(num))
    elif num % 2 != 0:
        i = i + 1
        print(not_even(num))
```

Output:

```
2\problem4.py
Enter an integer between 1 and 10, or type -1 to quit:
5
('Odd', [5])
Enter an integer between 1 and 10, or type -1 to quit:
8
('Even', [5, 8])
Enter an integer between 1 and 10, or type -1 to quit:
11
Try again

Enter an integer between 1 and 10, or type -1 to quit:
0
Try again

Enter an integer between 1 and 10, or type -1 to quit:
-1
('Number of inputs = ', 2, 'Sum of your inputs = ', 13)
>>> |
```

Problem 5:

Code:

```
string=input("Enter a string:\n")
if "xyz" in string:
    x_index = string.index("xyz")
    if string[x_index-1] == ".":
        string = string[x_index+1:]
        if len(string) < 3:
            print(False)
        else:
            x_index = string.index("xyz")
            if string[x_index+1] == "y" and string[x_index+2] == "z":
                if (string[x_index+1] == "x") and (string[x_index+2] == "y"):
                    print(True)
                else:
                    print(True)
            elif string[x_index+1] == "y" and string[x_index+2] == "z":
                if (string[x_index+1] == "x") and (string[x_index+2] == "y"):
                    print(True)
                else:
                    print(True)
    else:
        print(False)
```

Output:

```
2\problem5.py
Enter a string:
abc.xyz
False
>>>
= RESTART: C:\Us
2\problem5.py
Enter a string:
xyz.abc
True
>>> |
```

Problem 6:

Code:

```
day = ["sunday", "monday", "tuesday", "wednesday", "thursday", "friday", "saturday"]

day_of_week = str(input("Enter the day of the week:\n"))
lowercase = day_of_week.lower()
if lowercase in day:
    print(f"{day_of_week} has the index of", day.index(day_of_week)+1)

days = int(input("In how many days are we meeting:\n"))
num_of_days = ((day.index(day_of_week)) + days) % 7
meeting_day = day[num_of_days]
print(f"We'll meet on {meeting_day}")
```

Output:

```
Enter the day of the week:
tuesday
tuesday has the index of 3
In how many days are we meeting:
3
We'll meet on friday
>>>
= RESTART: C:\Users\adnan\OneDrive\Documents\IN0005\AdnanShah_220000917_IN0005problemsolving
2\problem6.py
Enter the day of the week:
tuesday
tuesday has the index of 3
In how many days are we meeting:
10
We'll meet on friday
>>> |
```

Problem 7

Code:

```
string1=input("Enter a string:\n")
string2=input("Enter another string:\n")
string1 = string1.lower()
string2 = string2.lower()
if (len(string1) <= 1 or len(string2) <= 1):
    if (string1[0-1] == string2[-1]):
        print(True)
    elif (string2[0-1] == string1[-1]):
        print(True)
    else:
        print(False)
else:
    if (string1[0-1] == string2[-1]) and (string1[0-2] == string2[-2]):
        print(True)
    elif (string2[0-1] == string1[-1]) and (string2[0-2] == string1[-2]):
        print(True)
    else:
        print(False)|
```


Output:

```
2\problem7.py
Enter a string:
tqdwefwef
Enter another string:
okokkok
False
>>>
= RESTART: C:\Users\adn
2\problem7.py
Enter a string:
tadabc
Enter another string:
abc
True
>>> |
```

Problem 8 - Functions

Code:

```
#problem 1
def fibonacci(num):
    a = 0
    b = 1
    num_list = [0,1]
    if num < 0:
        return('Invalid Input')
    elif num == 0:
        return a
        num_list.append(a)
    elif num == 1:
        return b
        num_list.append(b)
    else:
        for i in range (2, num):
            total = a + b
            a = b
            b = total
            num_list.append(b)
        return num_list

num = int(input('How many numbers do you want inside the sequence:\n'))
print(fibonacci(num))

print('\n')

#problem 4
active = True
i = 0

num_list = []

def end_game(num, i):
    return("Number of inputs = ", i, 'Sum of your inputs = ', sum(num_list))

def out_of_range(num):
    return("Try again\n")

def not_odd(num):
    num_list.append(num)
    return("Even", num_list)

def not_even(num):
    num_list.append(num)
    return("Odd", num_list)
```

```

while active:
    num = int(input("Enter an integer between 1 and 10, or type -1 to quit:\n"))
    if num == -1:
        print(end_game(num, i))
        break
    elif num > 10 or num < 1:
        print(out_of_range(num))
    elif num % 2 == 0:
        i = i + 1
        print(not_odd(num))
    elif num % 2 != 0:
        i = i + 1
        print(not_even(num))

print('\n')

#problem 5
def xyz_ending(string):
    if "xyz" in string:
        x_index = string.index("xyz")
        if string[x_index-1] == ".":
            string = string[x_index+1:]
            if len(string) < 3:
                return(False)
            else:
                x_index = string.index("xyz")
                if string[x_index+1] == "y" and string[x_index+2] == "z":
                    if (string[x_index+1] == "x") and (string[x_index+2] == "y"):
                        return(True)
                    else:
                        return(True)

                elif string[x_index+1] == "y" and string[x_index+2] == "z":
                    if (string[x_index+1] == "x") and (string[x_index+2] == "y"):
                        return(True)
                    else:
                        return(True)
        else:
            return(False)

string=input("Enter a string:\n")
print(xyz_ending(string))

print('\n')

```

```

#problem 6
def friend(day_of_week):
    day = ["sunday", "monday", "tuesday", "wednesday", "thursday", "friday", "saturday"]

    lowercase = day_of_week.lower()
    if lowercase in day:
        return(f"{day_of_week} has the index of", day.index(day_of_week)+1)

def meeting(days):
    day = ["sunday", "monday", "tuesday", "wednesday", "thursday", "friday", "saturday"]
    num_of_days = ((day.index(day_of_week)) + days) % 7
    meeting_day = day[num_of_days]
    return(f"We'll meet on {meeting_day}")

day_of_week = input("Enter the day of the week:\n")
print(friend(day_of_week))
days = int(input("In how many days are we meeting:\n"))
print(meeting(days))

print('\n')

#problem 7
def end(string1, string2):
    string1 = string1.lower()
    string2 = string2.lower()
    if (len(string1) <= 1 or len(string2) <= 1):
        if (string1[0-1] == string2[-1]):
            return(True)
        elif (string2[0-1] == string1[-1]):
            return(True)
        else:
            return(False)
    else:
        if (string1[0-1] == string2[-1]) and (string1[0-2] == string2[-2]):
            return(True)
        elif (string2[0-1] == string1[-1]) and (string2[0-2] == string1[-2]):
            return(True)
        else:
            return(False)

string1=input("Enter a string:\n")
string2=input("Enter another string:\n")
print(end(string1, string2))

```

Output:

```
2 \problems.py
How many numbers do you want inside the sequence:
5
[0, 1, 1, 2, 3]

Enter an integer between 1 and 10, or type -1 to quit:
5
('Odd', [5])
Enter an integer between 1 and 10, or type -1 to quit:
6
('Even', [5, 6])
Enter an integer between 1 and 10, or type -1 to quit:
-1
('Number of inputs = ', 2, 'Sum of your inputs = ', 11)

Enter a string:
xyz
True

Enter the day of the week:
tuesday
('tuesday has the index of', 3)
In how many days are we meeting:
10
We'll meet on friday

Enter a string:
abc
Enter another string:
tadfeeabc
True
>>> |
```