<<NUMBER 21 GAME>>

21CSS101J-PROGRAMMING FOR PROBLEM SOLVING

MINI PROGRAM

Submitted by:

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NUMBER 21 GAME

PROBLEM STATEMENT:

In order to take our mind off the daily stress and frustations of life, we developed a program for a game called NUMBER 21.

It is developed by using simple Python. The Object of game is to get as close to 21 points as possible. We can play until we get the value close to 21.

PROCEDURE:

Twenty plus one is a game which progresses by counting up 1 to 21, with the player who calls “21” is eliminated. It can be played between any number of players. The game illustrated here is between the player and the computer. There can be many variations in the game.

- The player can choose to start first or second.
- The list of numbers is shown before the Player takes his turn so that it becomes convenient.
- If consecutive numbers are not given in input then the player is automatically disqualified.
- The player loses if he gets the chance to call 21 and wins otherwise.

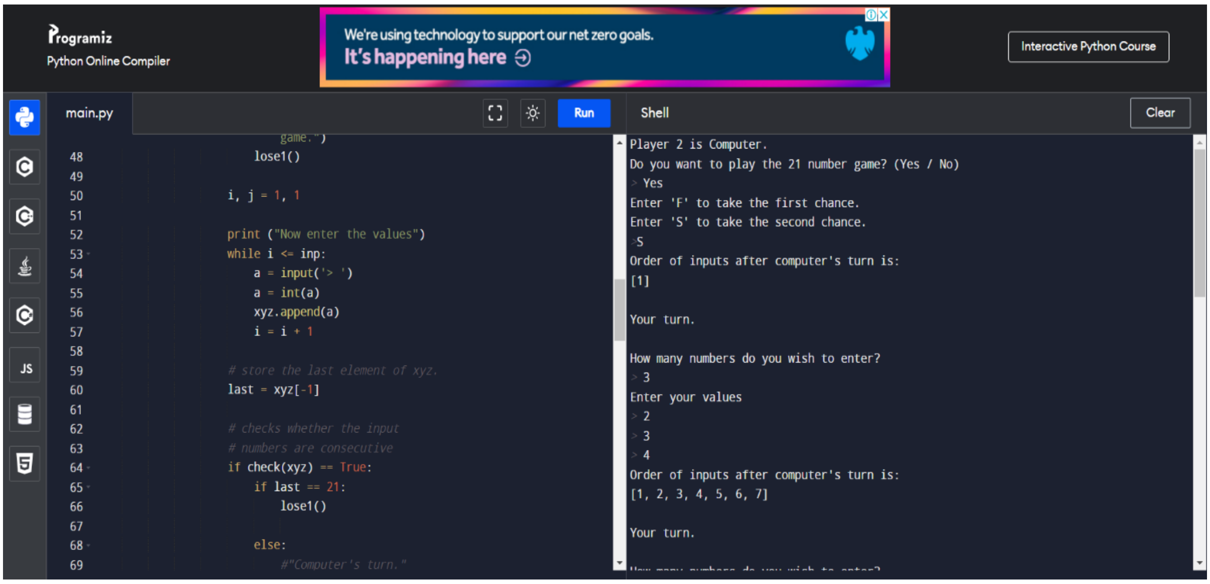
Winning against the computer can be possible by choosing to play second. The strategy is to call numbers till the multiple of 4 which would eventually lead to 21 on computer hence making the player the winner .While ,writing the program we use if ,else,elif and while loop.

CODE:

```
#Python code to play 21 Number game by S.Sai Charani

# returns the nearest multiple to 4
def nearestMultiple(num):
    if num >= 4:
        near = num + (4 - (num % 4))
    else:
        near = 4
    return near

def lose1():
    print ("\n\n YOU LOSE!")
    print("Better luck next time !")
    exit(0)

# checks whether the numbers are consecutive
def check(xyz):
    i = 1
    while i<len(xyz):
        if (xyz[i]-xyz[i-1])!= 1:
            return False
        i = i + 1
    return True

# starts the game
def start1():
    xyz = []
    last = 0
    while True:
        print ("Enter 'F' to take the first chance.")
        print ("Enter 'S' to take the second chance.")
        chance = input('>')
```

```
# player takes the first chance
if chance == "F":
    while True:
        if last == 20:
            lose1()
        else:
            print ("\nYour Turn.")
            print ("\nHow many numbers do you wish to enter?")
            inp = int(input('> '))

            if inp > 0 and inp <= 3:
                comp = 4 - inp
            else:
                print ("Wrong input. You are disqualified from the game.")
                lose1()

            i, j = 1, 1

            print ("Now enter the values")
            while i <= inp:
                a = input('> ')
                a = int(a)
                xyz.append(a)
                i = i + 1

            # store the last element of xyz.
            last = xyz[-1]

            # checks whether the input
            # numbers are consecutive
            if check(xyz) == True:
                if last == 21:
                    lose1()

                else:
                    #"Computer's turn."
                    while j <= comp:
                        xyz.append(last + j)
                        j = j + 1
                    print ("Order of inputs after computer's turn is: ")
                    print (xyz)
                    last = xyz[-1]
            else:
                print ("\nYou did not input consecutive integers.")
                lose1()

# player takes the second chance
elif chance == "S":
    comp = 1
    last = 0
    while last < 20:
        #"Computer's turn"
        j = 1
        while j <= comp:
            xyz.append(last + j)
            j = j + 1
        print ("Order of inputs after computer's turn is:")
        print (xyz)
        if xyz[-1] == 20:
            lose1()

        else:
            print ("\nYour turn.")
            print ("\nHow many numbers do you wish to enter?")
            inp = input('> ')
            inp = int(inp)
            i = 1
            print ("Enter your values")
            while i <= inp:
                xyz.append(int(input('> ')))
                i = i + 1
            last = xyz[-1]
            if check(xyz) == True:
                # print (xyz)
                near = nearestMultiple(last)
                comp = near - last
                if comp == 4:
                    comp = 3
                else:
                    comp = comp
            else:
                # if inputs are not consecutive
                # automatically disqualified
            print ("\nYou did not input consecutive integers.")
            # print ("You are disqualified from the game.")
            lose1()
      print ("\n\nCONGRATULATIONS !!!")
      print ("YOU WON !")
      exit(0)

    else:
      print ("wrong choice")


game = True
while game == True:
    print ("Player 2 is Computer.")
    print("Do you want to play the 21 number game? (Yes / No)")
    ans = input('> ')
    if ans =='Yes':
      start1()
    else:
      print ("Do you want quit the game?(yes / no)")
      nex = input(‘>’)
      if nex == "yes":
        print ("You are quitting the game...")
        exit(0)
      elif nex == "no":
        print ("Continuing...")
      else:
        print ("Wrong choice")
```

OUT PUT: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```
                    game.")
                lose1()

            i, j = 1, 1

            print ("Now enter the values")
            while i <= inp:
                a = input('> ')
                a = int(a)
                xyz.append(a)
                i = i + 1

            # store the last element of xyz.
            last = xyz[-1]

            # checks whether the input
            # numbers are consecutive
            if check(xyz) == True:
                if last == 21:
                    lose1()

                else:
                    #"Computer's turn."
```

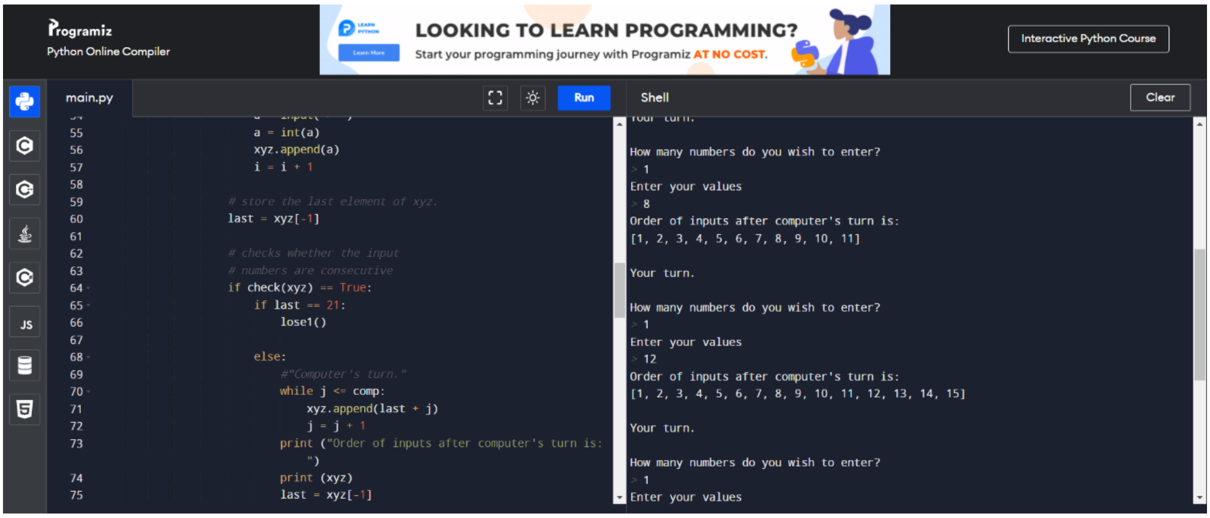
```
Player 2 is Computer.
Do you want to play the 21 number game? (Yes / No)
> Yes
Enter 'F' to take the first chance.
Enter 'S' to take the second chance.
>S
Order of inputs after computer's turn is:
[1]

Your turn.

How many numbers do you wish to enter?
> 3
Enter your values
> 2
> 3
> 4
Order of inputs after computer's turn is:
[1, 2, 3, 4, 5, 6, 7]

Your turn.

How many numbers do you wish to enter?
```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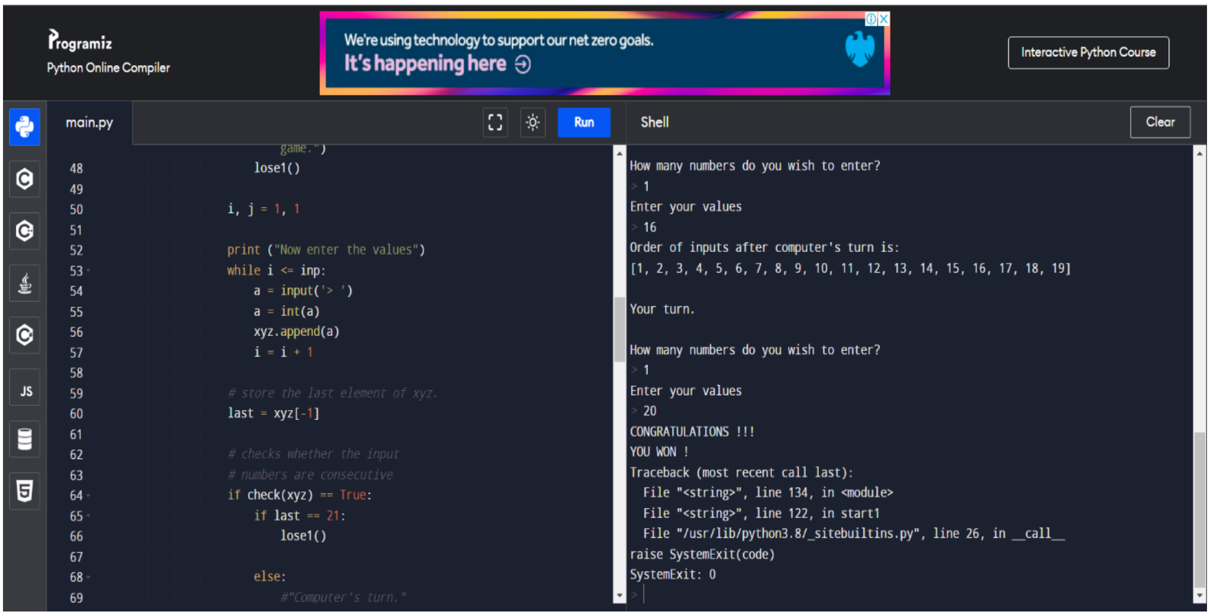
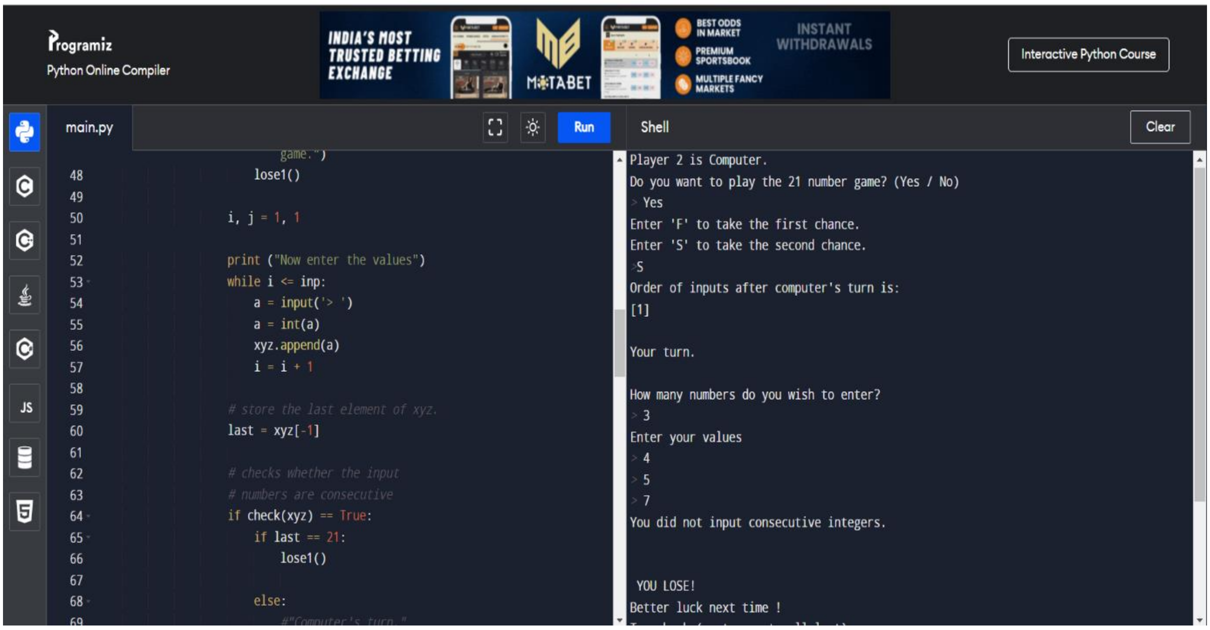
```
                a = input('> ')
                a = int(a)
                xyz.append(a)
                i = i + 1

            # store the last element of xyz.
            last = xyz[-1]

            # checks whether the input
            # numbers are consecutive
            if check(xyz) == True:
                if last == 21:
                    lose1()

                else:
                    #"Computer's turn."
                    while j <= comp:
                        xyz.append(last + j)
                        j = j + 1
                    print ("Order of inputs after computer's turn is:
                        ")
                    print (xyz)
                    last = xyz[-1]
```

```
Your turn.

How many numbers do you wish to enter?
> 1
Enter your values
> 8
Order of inputs after computer's turn is:
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]

Your turn.

How many numbers do you wish to enter?
> 1
Enter your values
> 12
Order of inputs after computer's turn is:
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

Your turn.

How many numbers do you wish to enter?
> 1
Enter your values
```



```
            game.")
        lose1()

    i, j = 1, 1

    print ("Now enter the values")
    while i <= inp:
        a = input('> ')
        a = int(a)
        xyz.append(a)
        i = i + 1

    # store the last element of xyz.
    last = xyz[-1]

    # checks whether the input
    # numbers are consecutive
    if check(xyz) == True:
        if last == 21:
            lose1()

        else:
            #"Computer's turn."
```

```
How many numbers do you wish to enter?
> 1
Enter your values
> 16
Order of inputs after computer's turn is:
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

Your turn.

How many numbers do you wish to enter?
> 1
Enter your values
> 20
CONGRATULATIONS !!!
YOU WON !
Traceback (most recent call last):
  File "<string>", line 134, in <module>
  File "<string>", line 122, in start1
  File "/usr/lib/python3.8/_sitebuiltins.py", line 26, in __call__
raise SystemExit(code)
SystemExit: 0
>
```



```
            game.")
        lose1()

    i, j = 1, 1

    print ("Now enter the values")
    while i <= inp:
        a = input('> ')
        a = int(a)
        xyz.append(a)
        i = i + 1

    # store the last element of xyz.
    last = xyz[-1]

    # checks whether the input
    # numbers are consecutive
    if check(xyz) == True:
        if last == 21:
            lose1()

        else:
            #"Computer's turn."
```

```
Player 2 is Computer.
Do you want to play the 21 number game? (Yes / No)
> Yes
Enter 'F' to take the first chance.
Enter 'S' to take the second chance.
>S
Order of inputs after computer's turn is:
[1]

Your turn.

How many numbers do you wish to enter?
> 3
Enter your values
> 4
> 5
> 7
You did not input consecutive integers.



 YOU LOSE!
Better luck next time !
Traceback (most recent call last):
```

CONCLUSION:

The game is executed successfully.The Numbers we enter should be consecutive which is very mandatory,the

Errors can be corrected ,if we give any wrong output then it shows you lost and better luck next time.

There by,

Number 21 game is runned and executed.