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## *Introduction*

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**Topic:** Mini Project

**Subject:** Python Programming

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# 1. Basic Calculator

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## Code:

```
a=int(input("Enter the first number: "))

b=int(input("Enter the second number: "))

choice=input("Select which operation you want to perform! (+,-,*,/,//,%,^): ")

if choice=="+":

    print("\nThe Addition of", a,"+",b,"is:",a+b)

elif choice=="-":

    print("\nThe Subtraction of",a,"-",b,"is:",a-b)

elif choice=="*":

    print("\nThe Multiplication of",a,"*",b,"is:",a*b)

elif choice=="/":

    print("\nThe Division of",a,"/",b,"is:",a/b)

elif choice=="//":

    print("\nThe Division(Round off) of",a,"//",b,"is:",a//b)

elif choice=="%":

    print("\nThe Reminder of",a,"%",b,"is:",a%b)

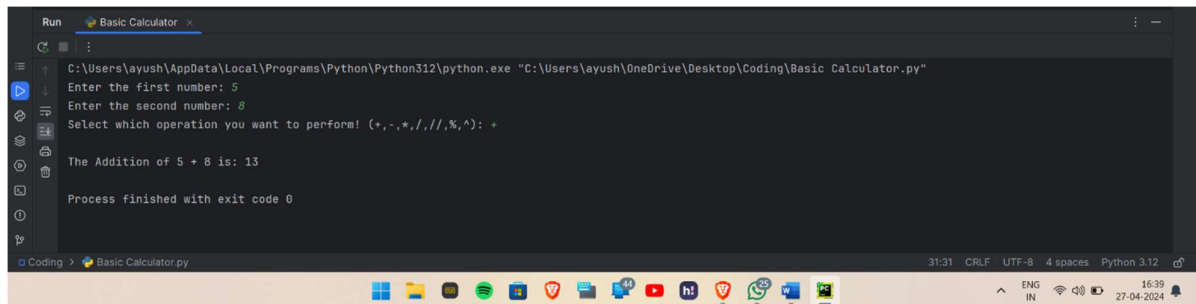
elif choice=="^":
```

```
print("\nThe Exponential of",a,"^",b,"is:",a**b,"\n")
```

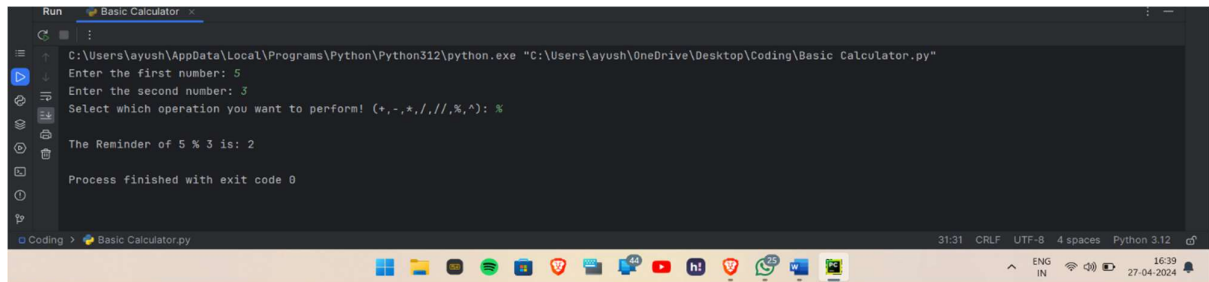
else:

```
print("Invalid Character")
```

## Output



```
Run Basic Calculator x
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Basic Calculator.py"
Enter the first number: 5
Enter the second number: 8
Select which operation you want to perform! (+,-,*,/,//,%,^): +
The Addition of 5 + 8 is: 13
Process finished with exit code 0
Coding > Basic Calculator.py 31:31 CRLF UTF-8 4 spaces Python 3.12
```



```
Run Basic Calculator x
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Basic Calculator.py"
Enter the first number: 5
Enter the second number: 3
Select which operation you want to perform! (+,-,*,/,//,%,^): %
The Remainder of 5 % 3 is: 2
Process finished with exit code 0
Coding > Basic Calculator.py 31:31 CRLF UTF-8 4 spaces Python 3.12
```

---

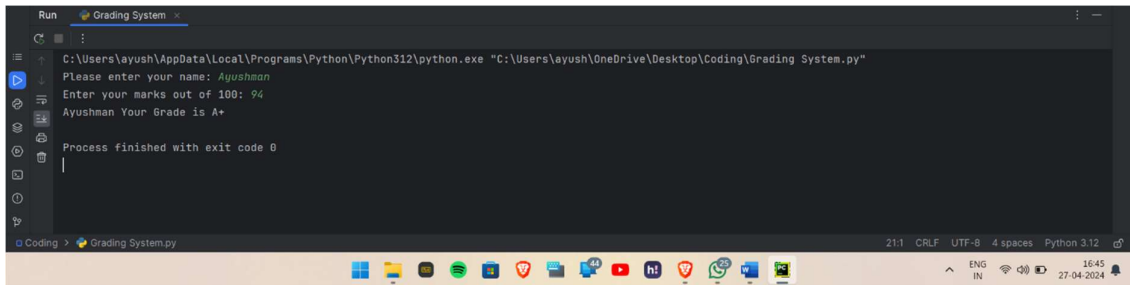
## 2. Grading System

---

### Code:

```
n=input("Please enter your name: ")
g=int(input("Enter your marks out of 100: "))
if g>90 and g<=100:
    print(f"{n} Your Grade is A+")
elif g>80 and g<=90:
    print(f"{n} Your Grade is A")
elif g>70 and g<=80:
    print(f"{n} Your Grade is B+")
elif g>60 and g<=70:
    print(f"{n} Your Grade is B")
elif g>50 and g<=60:
    print(f"{n} Your Grade is C+")
elif g>=40 and g<=50:
    print(f"{n} Your Grade is C")
elif g<40:
    print(f"{n} Your Grade is F , Fail")
elif g>100 or g<0:
    print("!!Invalid Input!")
```

## Output

A screenshot of a Windows terminal window titled "Grading System". The command prompt shows the execution of a Python script: `C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Grading System.py"`. The script prompts for a name, which is entered as "Ayushman". It then prompts for marks out of 100, which is entered as "94". The script outputs "Ayushman Your Grade is A+" and then "Process finished with exit code 0". The terminal window has a dark background and a light blue border. The Windows taskbar is visible at the bottom with various application icons and the system clock showing 16:45 on 27-04-2024.

```
Run Grading System
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Grading System.py"
Please enter your name: Ayushman
Enter your marks out of 100: 94
Ayushman Your Grade is A+
Process finished with exit code 0
```

---

## 3. *Inventory Management System*

---

### Code:

```
inventory = {
    "A1": {"name": "Apples", "price": 16, "quantity": 10},
    "B2": {"name": "Bananas", "price": 8, "quantity": 20},
    "C3": {"name": "Milk", "price": 50, "quantity": 5},
}
```

```
cart = {}
```

```
total_amount = 0
```

```
print("Welcome to the Supermarket!")
```

```
while True:
```

```
    print("\nAvailable Items:")
```

```

for id, details in inventory.items():
    print(f"{id}: {details['name']} - ₹{details['price']} ({details['quantity']} in stock)")

print("\n1. Add Item")
print("2. View Cart")
print("3. Remove Item")
print("4. Checkout")
print("5. Exit")

choice = input("Enter your choice: ")

if choice in ['1', '3']:

    id = input("Enter the ID of the item: ")

    if id in inventory:

        if choice == '1':
            quantity_available = inventory[id]["quantity"]
            quantity = int(input(f"Enter quantity (available: {quantity_available}): "))

            if quantity <= quantity_available:
                inventory[id]["quantity"] -= quantity
                cart[id] = cart.get(id, 0) + quantity
                total_amount += quantity * inventory[id]["price"]
                print(f"{quantity} {inventory[id]['name']} added to cart!")

            else:
                print(f"Insufficient quantity of {inventory[id]['name']} available.")

```

else:

if id in cart:

quantity\_in\_cart = cart[id]

quantity = int(input(f"Enter quantity to remove (in your cart: {quantity\_in\_cart}): "))

if quantity <= quantity\_in\_cart:

inventory[id]["quantity"] += quantity

cart[id] -= quantity

total\_amount -= quantity \* inventory[id]["price"]

if cart[id] == 0:

del cart[id]

print(f"{quantity} {inventory[id]['name']} removed from cart.")

else:

print(f"Insufficient quantity of {inventory[id]['name']} in your cart.")

else:

print(f"Item with ID '{id}' not found in your cart.")

elif choice == '2':

if not cart:

print("Your cart is empty.")

else:

print("\nYour Cart:")

for id, quantity in cart.items():

details = inventory[id]

print(f"{quantity} {details['name']} - ₹{details['price']} each")

print(f"\nTotal Amount: ₹{total\_amount}")



```
elif choice == '4':
```

```
    if not cart:
```

```
        print("Your cart is empty. Please add items before checkout.")
```

```
    else:
```

```
        print("\nYour Cart:")
```

```
        for id, quantity in cart.items():
```

```
            details = inventory[id]
```

```
            print(f"{quantity} {details['name']} - ₹{details['price']} each")
```

```
        print(f"\nTotal Amount: ₹{total_amount}")
```

```
        print("You only have to use cash any other method is not allowed")
```

```
        print("Thank you for shopping!")
```

```
        break
```

```
elif choice == '5':
```

```
    print("Thank you for visiting!")
```

```
    break
```

```
else:
```

```
    print("Invalid choice. Please try again.")
```

# Output

```
Run Projects
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe C:\Users\ayush\OneDrive\Desktop\Coding\Projects.py
Welcome to the Supermarket!

Available Items:
A1: Apples - ₹16 (10 in stock)
B2: Bananas - ₹8 (20 in stock)
C3: Milk - ₹50 (5 in stock)

1. Add Item
2. View Cart
3. Remove Item
4. Checkout
5. Exit
Enter your choice: 1
Enter the ID of the item: A1
Enter quantity (available: 10): 5
5 Apples added to cart!

Available Items:
A1: Apples - ₹16 (5 in stock)
B2: Bananas - ₹8 (20 in stock)
C3: Milk - ₹50 (5 in stock)

1. Add Item
2. View Cart
3. Remove Item
```

99:55 (3476 chars, 96 line breaks) CRLF UTF-8 4 spaces Python 3.12

```
Run Projects
Enter your choice: 1
Enter the ID of the item: A1
Enter quantity (available: 10): 5
5 Apples added to cart!

Available Items:
A1: Apples - ₹16 (5 in stock)
B2: Bananas - ₹8 (20 in stock)
C3: Milk - ₹50 (5 in stock)

1. Add Item
2. View Cart
3. Remove Item
4. Checkout
5. Exit
Enter your choice: 4

Your Cart:
5 Apples - ₹16 each

Total Amount: ₹80
You only have to use cash any other method is not allowed
Thank you for shopping!

Process finished with exit code 0
```

99:55 (3476 chars, 96 line breaks) CRLF UTF-8 4 spaces Python 3.12

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## 4. Number Guessing Game

---

### Code:

```
import random

def number_guessing_game():
    lowest = 1
    highest = 100
    secret_number = random.randint(lowest, highest)
    attempts = 0

    print("Welcome to the Number Guessing Game!")

    choice=input("Which mode do you want to play! Press c for challenge mode or n for normal mode: ").lower()

    if choice=="c":
        while True:
            guess = int(input(f"Guess a number between {lowest} and {highest}: "))
            attempts += 1

            if guess < secret_number:
                print("Too low. Try again!")
            elif guess > secret_number:
                print("Too high. Try again!")
            else:
                print(f"Congratulations! You guessed the secret number {secret_number} in {attempts} attempts.")
                break
```

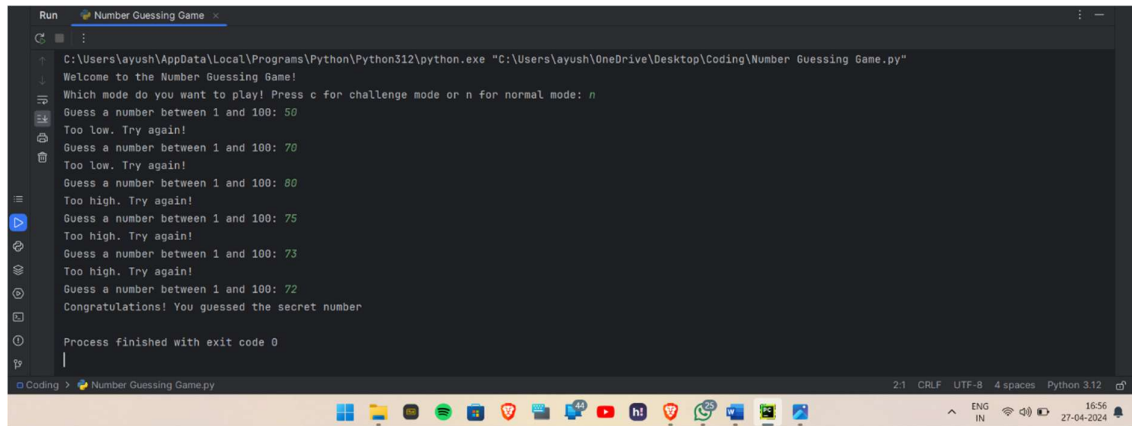
```
    if attempts == 10:
        print(f"Sorry, you ran out of attempts! The secret number is {secret_number}.")
        break
elif choice=="n":

while True:
    guess = int(input(f"Guess a number between {lowest} and {highest}: "))

    if guess < secret_number:
        print("Too low. Try again!")
    elif guess > secret_number:
        print("Too high. Try again!")
    else:
        print(f"Congratulations! You guessed the secret number")
        break

number_guessing_game()
```

# Output

A screenshot of a Windows terminal window titled "Number Guessing Game". The terminal shows the execution of a Python script. The output is as follows:

```
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Number Guessing Game.py"
Welcome to the Number Guessing Game!
Which mode do you want to play! Press c for challenge mode or n for normal mode: n
Guess a number between 1 and 100: 50
Too low. Try again!
Guess a number between 1 and 100: 70
Too low. Try again!
Guess a number between 1 and 100: 80
Too high. Try again!
Guess a number between 1 and 100: 75
Too high. Try again!
Guess a number between 1 and 100: 73
Too high. Try again!
Guess a number between 1 and 100: 72
Congratulations! You guessed the secret number
Process finished with exit code 0
```

The terminal window has a dark theme. The Windows taskbar is visible at the bottom with various application icons and the system clock showing 16:56 on 27-04-2024.

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## 5. Number System

---

### Code:

```
start = int(input("Enter starting no.: "))
end = int(input("Enter the ending no.: "))

if start > end:
    start, end = end, start

order = input("Press 1 for 'forward' or 2 for 'backward' for order: ")
display = input("Press 3 for 'horizontal' or 4 'vertical' for the display: ")
```

```
print("\nPrinting the numbers:")
```

```
if order == '1':
```

```
    for num in range(start, end + 1):
```


```
        print(num, end=' ' if display == '3' else '\n')
```

```
else:
```

```
    for num in range(end, start - 1, -1):
```

```
        print(num, end=' ' if display == '3' else '\n')
```

## Output



```
Run Number System
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Number System.py"
Enter starting no.: 1
Enter the ending no.: 20
Press 1 for 'forward' or 2 for 'backward' for order: 1
Press 3 for 'horizontal' or 4 'vertical' for the display: 3

Printing the numbers:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Process finished with exit code 0
```

---

## 6. Reporting (By File Handling)

---

### Code:

```
input_file_path = "C:\\Users\\ayush\\OneDrive\\Documents\\student_data.txt"
output_file_path = "C:\\Users\\ayush\\OneDrive\\Documents\\report_card.txt"

with open("C:\\Users\\ayush\\OneDrive\\Documents\\student_data.txt", 'r') as file:
    lines = file.readlines()

report_card = ""
for idx, line in enumerate(lines):
    data = line.strip().split(',')
    student_id = idx + 1
    name = data[0]
    marks = list(map(int, data[1:]))
    total_marks = sum(marks)
    average_marks = total_marks / len(marks)

    if average_marks >= 90:
        grade = 'A'
    elif average_marks >= 80:
        grade = 'B'
    elif average_marks >= 70:
        grade = 'C'
    elif average_marks >= 60:
        grade = 'D'
    else:
```

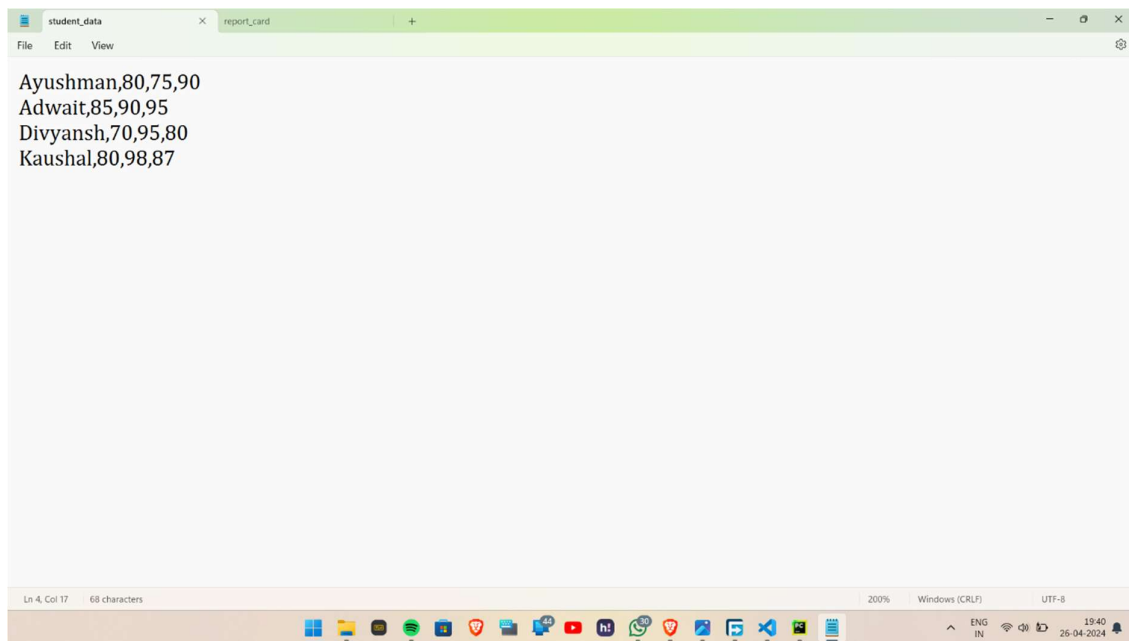
```
grade = 'F'
```

```
report_card += f"ID: {student_id}\nName: {name}\nMarks: {' '.join(map(str, marks))}\nTotal  
Marks: {total_marks}\nAverage Marks: {average_marks:.2f}\nGrade: {grade}\n\n"
```

```
with open("C:\\Users\\ayush\\OneDrive\\Documents\\report_card.txt", 'w') as file:
```

```
file.write(report_card)
```

## Output

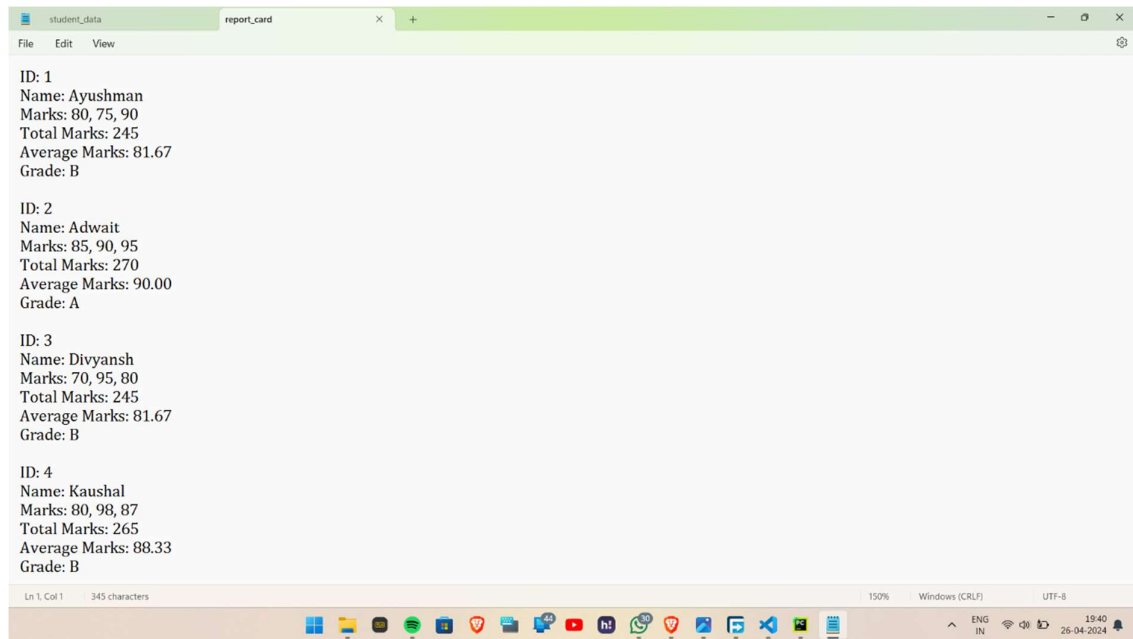


A screenshot of a Notepad window with two tabs: 'student\_data' and 'report\_card'. The 'report\_card' tab is active and contains the following text:

```
Ayushman,80,75,90  
Adwait,85,90,95  
Divyansh,70,95,80  
Kaushal,80,98,87
```

The status bar at the bottom indicates 'Ln 4, Col 17' and '68 characters'. The Windows taskbar is visible at the bottom of the screen.





---

## 7. *Rock Paper Scissor Game*

---

Code:

```
print("Welcome to Rock Paper Scissors game")  
  
mode = int(input("Enter which mode do you want to play: 2 players mode or 3 players mode: "))  
  
while True:  
    if mode == 2:  
        print("You have selected 2 players mode")
```

```
p1 = input("Player 1, Please enter your name: ")
```

```
p2 = input("Player 2, Please enter your name: ")
```

```
while True:
```

```
    c1 = input(f"{p1}, choose between: ROCK, PAPER, SCISSOR: ").upper()
```

```
    if c1 not in ["ROCK", "PAPER", "SCISSOR"]:
```

```
        print("INVALID INPUT")
```

```
        continue
```

```
    else:
```

```
        break
```

```
while True:
```

```
    c2 = input(f"{p2}, choose between: ROCK, PAPER, SCISSOR: ").upper()
```

```
    if c2 not in ["ROCK", "PAPER", "SCISSOR"]:
```

```
        print("INVALID INPUT")
```

```
        continue
```

```
    else:
```

```
        break
```

```
if c1 == c2:
```

```
    print("It's a Tie. TRY AGAIN")
```

```
    elif (c1 == "ROCK" and c2 == "SCISSOR") or (c1 == "PAPER" and c2 == "ROCK") or (c1 ==  
"SCISSOR" and c2 == "PAPER"):
```

```
        print(f"{p1} WON")
```

```
    else:
```

```
        print(f"{p2} WON")
```

```
elif mode == 3:
```

```
    print("You have selected 3 players mode")
```

```
    p1 = input("Player 1, Please enter your name: ")
```

```
    p2 = input("Player 2, Please enter your name: ")
```

```
p3 = input("Player 3, Please enter your name: ")
```

```
while True:
```

```
    c1 = input(f"{p1}, choose between: ROCK, PAPER, SCISSOR: ").upper()
```

```
    if c1 not in ["ROCK", "PAPER", "SCISSOR"]:
```

```
        print("INVALID INPUT")
```

```
        continue
```

```
    else:
```

```
        break
```

```
while True:
```

```
    c2 = input(f"{p2}, choose between: ROCK, PAPER, SCISSOR: ").upper()
```

```
    if c2 not in ["ROCK", "PAPER", "SCISSOR"]:
```

```
        print("INVALID INPUT")
```

```
        continue
```

```
    else:
```

```
        break
```

```
while True:
```

```
    c3 = input(f"{p3}, choose between: ROCK, PAPER, SCISSOR: ").upper()
```

```
    if c3 not in ["ROCK", "PAPER", "SCISSOR"]:
```

```
        print("INVALID INPUT")
```

```
        continue
```

```
    else:
```

```
        break
```

```
if c1 == c2 == c3:
```

```
    print("It's a Tie. TRY AGAIN")
```

```
    elif (c1 == "ROCK" and c2 == "SCISSOR" and c3 == "SCISSOR") or (c1 == "PAPER" and c2 == "ROCK" and c3 == "ROCK") or (c1 == "SCISSOR" and c2 == "PAPER" and c3 == "PAPER"):
```

```
        print("It's a Tie. TRY AGAIN")
```

```

        elif (c1 == "ROCK" and c2 == "SCISSOR" and c3 == "PAPER") or (c1 == "PAPER" and c2 ==
"ROCK" and c3 == "SCISSOR") or (c1 == "SCISSOR" and c2 == "PAPER" and c3 == "ROCK"):

            print(f"{p1} WON")

        elif (c1 == "ROCK" and c2 == "PAPER" and c3 == "SCISSOR") or (c1 == "PAPER" and c2 ==
"SCISSOR" and c3 == "ROCK") or (c1 == "SCISSOR" and c2 == "ROCK" and c3 == "PAPER"):

            print(f"{p2} WON")

        else:

            print(f"{p3} WON")

    else:

        print("INVALID CHOICE, Choose again")

        mode = int(input("Enter which mode do you want to play: 2 players mode or 3 players mode:
"))

ask = input("Want to play again? 'y' for yes and 'n' for no: ").lower()

if ask == "y":

    continue

elif ask == "n":

    break

else:

    print("Invalid choice. Exiting game.")

    break

```

## Output

```

Run Rock Paper Scissor Game
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Rock Paper Scissor Game.py"
Welcome to Rock Paper Scissors game
Enter which mode do you want to play: 2 players mode or 3 players mode: 2
You have selected 2 players mode
Player 1, Please enter your name: Ayushman
Player 2, Please enter your name: Divyansh
Ayushman, choose between: ROCK, PAPER, SCISSOR: rock
Divyansh, choose between: ROCK, PAPER, SCISSOR: Paper
Divyansh WON
Want to play again? 'y' for yes and 'n' for no: n
Process finished with exit code 0

```

---

## 8. *Roll the Dice*

---

### Code:

```
import random

while True:

    s1 = 0

    s2 = 0

    s3 = 0

    s4 = 0

    # 56 steps

    p1=input("Player 1 ! Please enter your name: ")

    p2 = input("Player 2 ! Please enter your name: ")

    p3 = input("Player 3 ! Please enter your name: ")

    while True:

        choose=input("Do you want computer as 4th player or not, (choose C for computer and P
for real player: ").upper()

        if choose == "P":

            p4 = input("Player 4 ! Please enter your name: ")

        elif choose=="C":

            print("Now! Computer is playing with you all as Player 4")

        else:

            print("!INVALID CHOICE! Choose Again")

            continue

        break

    while True:

        while True:
```

```

n1 = int(input(f"{p1}","\nEnter a number between 1 and 6:\n "))
if n1 < 1 or n1 > 6:
    print(f"!Error! {p1}","\Please enter a number between 1 and 6 not lower than 1 and not
greater than 6\\'")
    continue
else:
    s1+=n1
    break
while True:
    n2 = int(input(f"{p2}","\nEnter a number between 1 and 6:\n "))
    if n2 < 1 or n2 > 6:
        print(f"!Error! {p2}","\Please enter a number between 1 and 6 not lower than 1 and not
greater than 6\\'")
        continue
    else:
        s2 += n2
        break
while True:
    n3 = int(input(f"{p3}","\nEnter a number between 1 and 6:\n "))
    if n3 < 1 or n3 > 6:
        print(f"!Error! {p3}","\Please enter a number between 1 and 6 not lower than 1 and not
greater than 6\\'")
        continue
    else:
        s3+=n3
        break
while True:
    if choose=="P":
        n4 = int(input(f"{p4}","\nEnter a number between 1 and 6:\n "))
        if n4 < 1 or n4 > 6:
            print("!Error!Please enter a number between 1 and 6 not lower than 1 and not greater
than 6")

```

```

        continue

    else:

        s4 += n4

        break

    else:

        c=random.randint(0,6)

        s4 += c

        break

if s1>=56 and s2!=56 and s3!=56 and s4!=56:

    print(f"{p1}, WON the game")

    break

elif s1!=56 and s2>=56 and s3!=56 and s4!=56:

    print(f"{p2}, WON the game")

    break

elif s1!=56 and s2==56 and s3>=56 and s4!=56:

    print(f"{p3}, WON the game")

    break

elif s1!=56 and s2!=56 and s3!=56 and s4>=56:

    if choose=="P":

        print(f"{p4}, WON the game")

        break

    else:

        print("Computer , WON the game")

        break

else:

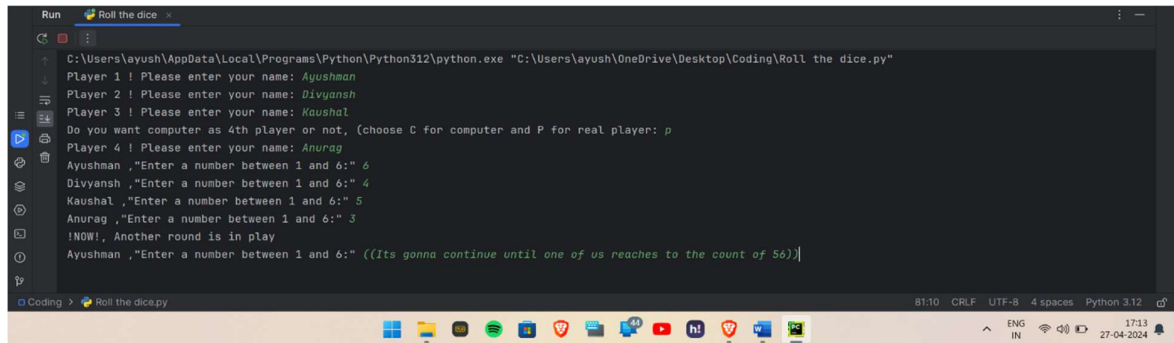
    print("!NOW!, Another round is in play")

    continue

break

```

## Output



The screenshot shows a terminal window titled "Roll the dice" with the following output:

```
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Roll the dice.py"
Player 1 ! Please enter your name: Ayushman
Player 2 ! Please enter your name: Divyansh
Player 3 ! Please enter your name: Kaushal
Do you want computer as 4th player or not, (choose C for computer and P for real player: p
Player 4 ! Please enter your name: Anurag
Ayushman , "Enter a number between 1 and 6:" 6
Divyansh , "Enter a number between 1 and 6:" 4
Kaushal , "Enter a number between 1 and 6:" 5
Anurag , "Enter a number between 1 and 6:" 3
!NOW!, Another round is in play
Ayushman , "Enter a number between 1 and 6:" ((Its gonna continue until one of us reaches to the count of 56))
```

---

## 9. Voting System

---

### Code:

```
print("Namaste! Welcome to Voting System")

name=input("Please Enter your name: ")
age=int(input("Enter your age: "))

if age>=18:
    print("Verified! You can vote.")
    while True:
        vote=input("Please select which political party you want to vote\n
        Below is the list of available Political Parties:-
```



```
\n1).BJP\n2).AAP\n3).BSP\n4).CPI(M)\n5).INC\n6).NPP\n
```

```
Please enter the name of the Political Party here: ").upper()
```

```
if vote=="BJP":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
elif vote=="AAP":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
elif vote == "BSP":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
elif vote=="CPI(M)":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
elif vote=="INC":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
elif vote=="NPP":
```

```
    print(f"Thank You! You have voted {vote}")
```

```
else:
```

```
    print("Wrong choice")
```

```
    continue
```

```
break
```

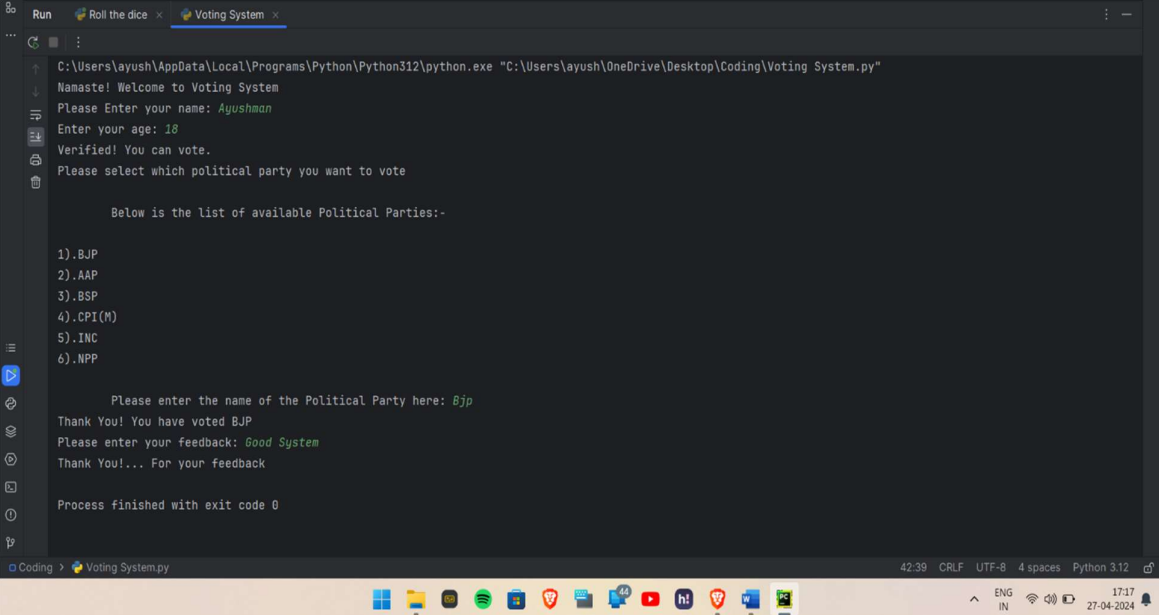
```
else:
```

```
    print("You are not eligible to vote")
```

```
feed=input("Please enter your feedback: ")
```

```
print("Thank You"
```

## Output



The screenshot shows a terminal window with the following output:

```
C:\Users\ayush\AppData\Local\Programs\Python\Python312\python.exe "C:\Users\ayush\OneDrive\Desktop\Coding\Voting System.py"
Namaste! Welcome to Voting System
Please Enter your name: Ayushman
Enter your age: 18
Verified! You can vote.
Please select which political party you want to vote

Below is the list of available Political Parties:-

1).BJP
2).AAP
3).BSP
4).CPI(M)
5).INC
6).NPP

Please enter the name of the Political Party here: Bjp
Thank You! You have voted BJP
Please enter your feedback: Good System
Thank You!... For your feedback

Process finished with exit code 0
```

The terminal window has a title bar with "Run", "Roll the dice", and "Voting System". The status bar at the bottom shows "Coding > Voting System.py", "42:39", "CRLF", "UTF-8", "4 spaces", "Python 3.12", and system icons for language (ENG/IN), network, and time (17:17, 27-04-2024).

Thank You