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SECTION – BG(1)

CLASS ROLL NO. – 04

UNIVERSITY ROLL NO. - 2315000176

MINI PROJECT OF PYTHON PROGRAMMING

PROJECT:01 – BASIC CALCULATOR

```
def add(x,y):
    return x+y

def subtraction(x,y):
    return x-y

def multiply(x*y):
    return x*y

def divide(x,y):
    return x/y

print("select operation.")
print("1. Add")
print("2. Subtract")
print("3. Multiply")
print("4. Divide")

while True:
      choice = input("enter choice(1/2/3/4): ")
      if choice in ('1' , '2' , '3' , '4'):
          try:
              num1 = float(input("enter first number: "))
              num2 = float(input("enter first number: "))
          except ValueError:
                print("Invalid input , Please enter a number .")
                continue
```

```
            if choice == '1':
                print(num1, "+" , num2, "=" , add(num1,num2))

            elif choice == '2':
                print(num1, "-", num2, "=" , subtract(num1, num2))

            elif choice == '3':
                print(num1, "*", num2, "=" , multiply(num1, num2))
            elif choice == '4':
                print(num1, "/", num2, "=" , divide(num1,num2))


            next_calculation = inbput("Let's do next calculation?
(yes/no): ")

            if next_calculation == "no":
              break
else:
      print("invalid input")
```

PROJECT:02 – NUMBER SYSTEM

```
import random
def forward(num):
    return num+1
def backward(num):
    return num-1
def horizontal(num):
    return num*2
def vertrical(num):
    return num/2
def generate_random_number():
    return random.randint(1,100)
def number_system():
```

```
        current_number = generate_random_number()

    print("Welcome to the Number System!")
    print("You are currently at:", current_number)

    while True:
        print("\nChoose your movement:")
        print("1. Forward")
        print("2. Backward")
        print("3. Horizontal")
        print("4. Vertical")
        print("5. Quit")

        choice = input("enter your choice(1/2/3/4/5):")
        if choice == '1':
            current_number = forward(current_number)
        elif choice == '2':
            current_number = backward(current_number)
        elif choice == '3':
            current_number = horizontal(current_number)
        elif choice == '4':
            current_number = vertical(current_number)
        elif choice == '5':
            print("Exiting the Number System . Goodbye!")
        break
  else:
      print("Invalid choice! Please enter a valid option.")
      print("You are now at:",current_number)
number_system()
```

PROJECT:03 – VOTING SYSTEM

```
class VotingSystem:

    def _init_(self):
        self.candidates = {}

    def add_candidate(self,name):
        if name not in self.candidates:
            self.candidates[name] = 0
            print(f “{name} has been added as a candidate.”)
        else:
            print(f “{name} is already a candidate.”)
    def vote(self,name):
        if name in self.candidates:
            self.candidates[name] +=1
            print(f “Thank you for voting for {name}.”)
        else:
            print(f “{name} is not a valid candidate.”)
    def get_results(self):
        print(“Election Results:”)
        for candidate, votes in self.candidates.items():
            print(f “{candidate}:{vote} votes”)

voting_system = VotingSystem()

voting_system.add_candidate(“candidate A”)
voting_system.add_candidate(“candidate B”)
```

```
voting_system.add_candidate(“candidate C”)


voting_system.vote(“Candidate A”)
voting_system.vote(“Candidate B”)

voting_system.vote(“Candidate C”)
voting_system.vote(“Candidate D”)



voting_system.get_results()
```

PROJECT:04 – GRADING SYSTEM

```
import random
def grade_marks(marks):

    if marks >= 90:

        return "A"

    elif marks >= 80:

        return "B"

    elif marks >= 70:

        return "C"
```

```
    elif marks >= 60:
        return "D"
    elif marks >= 50:
        return "E"
    else:
        return "F"

def add_bonus(marks):
    bonus = random.randint(0, 10)
    return marks + bonus

def subtract_penalty(marks):
    penalty = random.randint(0, 5)
    return max(0, marks - penalty)

def marks_grading_system():
    student_name = input("Enter student's name: ")
```

```
    student_marks = float(input("Enter student's marks: "))


    student_marks = add_bonus(student_marks)

    student_marks = subtract_penalty(student_marks)


    grade = grade_marks(student_marks)


    print("\nStudent Name:", student_name)

    print("Original Marks:", student_marks)

    print("Grade:", grade)


marks_grading_system()
```

PROJECT:05 – INVENTORY SYSTEM

```
 import random
 def hdn4wrd_purchase(item, price, amount):

    total_cost = price * amount
```

```
    return total_cost

def rv3rse_change(given, total_cost):
    return given - total_cost


def v3rt1c4l_count_notes(change):
    notes = [500, 200, 100, 50, 10, 5, 2, 1]
    notes_count = {}
    for note in notes:
        count = change // note
        if count > 0:
            notes_count[note] = count
            change %= note

    return notes_count


def inventory_system():
    inventory = {
```

```
    "item1": 10,
    "item2": 20,
    "item3": 15
}

while True:
    print("\nAvailable Items:")
    for item, quantity in inventory.items():
        print(f"{item}: {quantity}")

    item = input("\nEnter the item you want to purchase: ")
    if item not in inventory:
        print("Item not available! Please choose again.")
        continue

    price = random.randint(5, 100)
    amount = int(input(f"Enter the quantity of {item} you want to buy: "))
```

```
total_cost = hdn4wrd_purchase(item, price, amount)


print(f"Total cost for {amount} {item}: {total_cost}")


given = float(input("Enter the amount given: "))
change = rv3rse_change(given, total_cost)


if change < 0:
    print(f"You still need to pay {-change} more.")
elif change == 0:
    print("Exact amount given. Thank you!")
else:
    print(f"Change to be returned: {change}")
    notes_count = v3rt1c4l_count_notes(change)
    print("Number")
```

PROJECT:06 – NUMBER GUESSING GAME

```
import random
def generate_number():
    return random.randint(1, 100)
def guess_number():
    print("Welcome to the Number Guessing Game!")
    print("I'm thinking of a number between 1 and 100.")
    secret_number = generate_number()
    attempts = 0
    while True:
        guess = input("Take a guess: ")
        if not guess.isdigit():
            print("Please enter a valid number.")
            continue
        guess = int(guess)
        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 it right in {attempts}
attempts!")
            break
guess_number()
```

PROJECT:07 – ROLL THE DICE

```
import random
def roll_dice(num_dice=1, num_sides=6):
    if num_dice <= 0 or num_sides <= 0:
        return "Invalid input! Number of dice and number of sides must be
positive integers."
    results = []
    for _ in range(num_dice):
        roll_result = random.randint(1, num_sides)
        results.append(roll_result)
    return results
```

```
def main():
    print("Welcome to Roll the Dice!")
    num_dice = int(input("Enter the number of dice to roll: "))
    num_sides = int(input("Enter the number of sides for each die: ")
    dice_results = roll_dice(num_dice, num_sides)
    print("Results:", dice_results)
if __name__ == "__main__":
    main()
```

PROJECT:08 – ROCK PAPER SCISSOR

```
import random
def computer_choice():
    choices = ['rock', 'paper', 'scissors']
    return random.choice(choices)
def player_choice():
    choice = input("Enter your choice (rock/paper/scissors): ").lower()
    if choice in ['rock', 'paper', 'scissors']:
        return choice
```

```
    else:
        print("Invalid choice! Please enter 'rock', 'paper', or 'scissors'.")
        return player_choice()

def determine_winner(player, computer):
    if player == computer:
        return "It's a tie!"
    elif (player == 'rock' and computer == 'scissors') or (player == 'paper' and computer == 'rock') or (player == 'scissors' and computer == 'paper'):
        return "You win!"
    else:
        return "Computer wins!"
def play_game():
    print("Let's play Rock, Paper, Scissors!")
    player = player_choice()
    computer = computer_choice()
    print("You chose:", player)
```

```
    print("Computer chose:", computer)

    print(determine_winner(player, computer))

play_game()
```

--------THANK YOU----------