Institute of Computer Technology

B. Tech. Computer Science and Engineering

Semester: IV

Sub: Functional Programming

Course Code: 2CSE403

Practical Number:2

Objective:

Q.1 You are developing a program that classifies a given amount of money into smaller monetary units. The program lets the user enter an amount representing a total in dollars and cents, and then outputs a report listing the monetary equivalent in dollars, quarters, dimes, nickels, and pennies, as shown in the sample run. Your program should report the maximum number of dollars, then the number of quarters, dimes, nickels, and pennies, in this order, to result in the minimum number of coins.

Here is a sample run:

Enter an amount in double, for example 11.56: 11.56

Your amount 11.56 consists of

11 dollars

2 quarters

0 dimes

1 nickels

1 pennies

Q.2 Suppose you want to develop a program to play a lottery. The program randomly generates a two-digit number, prompts the user to enter a two-digit number, and determines whether the user wins according to the following rules:

a. If the user's input matches the lottery in the exact order, the award is $10,000.

b. If all the digits in the user's input match all the digits in the lottery number, the award is $5,000.

c. If one digit in the user's input matches a digit in the lottery number, the award is $2,000

3. Guessing Numbers: The problem is to guess what number a computer has in mind. You will write a program that randomly generates an integer between 0 and 100, inclusive. The program prompts the user to enter numbers continuously until it matches the randomly generated number.

For each user input, the program reports whether it is too low or too high, so the user can choose the next input intelligently.

Sample Run:

Guess a magic number between 0 and 100

Enter your guess: 50

Your guess is too high

Enter your guess: 25

Your guess is too low

Enter your guess: 42

Your guess is too high

Enter your guess: 39

Yes, the number is 39

Code :

```
import random



def classify_money(amount):
    dollars = int(amount)  # Whole dollars
    remaining_cents = round((amount - dollars) * 100)  # Convert to cents
    quarters = remaining_cents // 25
    remaining_cents %= 25
    dimes = remaining_cents // 10
    remaining_cents %= 10
    nickels = remaining_cents // 5
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    pennies = remaining_cents % 5


    print(f"Your amount {amount} consists of:")
    print(f"{dollars} dollars")
    print(f"{quarters} quarters")
    print(f"{dimes} dimes")
    print(f"{nickels} nickels")
    print(f"{pennies} pennies")



def lottery_game():
    lottery = random.randint(10, 99)  # Two-digit lottery number
    guess = int(input("Enter your lottery pick (two digits): "))

    lottery_digit1 = lottery // 10
    lottery_digit2 = lottery % 10
    guess_digit1 = guess // 10
    guess_digit2 = guess % 10

    print(f"The lottery number is: {lottery}")
    if guess == lottery:
        print("Exact match: you win $10,000")
    elif {guess_digit1, guess_digit2} == {lottery_digit1, lottery_digit2}:
        print("All digits match: you win $5,000")
    elif (guess_digit1 in {lottery_digit1, lottery_digit2} or
          guess_digit2 in {lottery_digit1, lottery_digit2}):
        print("One digit matches: you win $2,000")
    else:
        print("Sorry, no match")
```

```
def guessing_game():
    magic_number = random.randint(0, 100)
    guess = -1
    print("Guess a magic number between 0 and 100")
    while guess != magic_number:
        guess = int(input("Enter your guess: "))
        if guess > magic_number:
            print("Your guess is too high")
        elif guess < magic_number:
            print("Your guess is too low")
        else:
            print(f"Yes, the number is {magic_number}")


# Main menu
if __name__ == "__main__":
    while True:
        print("\nChoose a program to run:")
        print("1. Classify Money into Coins")
        print("2. Lottery Game")
        print("3. Guessing Numbers Game")
        print("4. Exit")
        choice = input("Enter your choice (1-4): ")
        if choice == "1":
            amount = float(input("Enter an amount in double (e.g., 11.56): "))
            classify_money(amount)
        elif choice == "2":
            lottery_game()
        elif choice == "3":
            guessing_game()
        elif choice == "4":
            print("Exiting...")
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        break
    else:
        print("Invalid choice. Please try again.")
```

Output :-

```
Choose a program to run:
1. Classify Money into Coins
2. Lottery Game
3. Guessing Numbers Game
4. Exit
Enter your choice (1-4): 1
Enter an amount in double (e.g., 11.56): 11.56
Your amount 11.56 consists of:
11 dollars
2 quarters
0 dimes
1 nickels
1 pennies

Choose a program to run:
1. Classify Money into Coins
2. Lottery Game
3. Guessing Numbers Game
4. Exit
Enter your choice (1-4): 2
Enter your lottery pick (two digits): 33
The lottery number is: 33
Exact match: you win $10,000

Choose a program to run:
1. Classify Money into Coins
```

2. Lottery Game

3. Guessing Numbers Game

4. Exit

Enter your choice (1-4): 3

Guess a magic number between 0 and 100

Enter your guess: 77

Your guess is too high

Enter your guess: 44

Your guess is too low

Enter your guess: 56

Your guess is too high

Enter your guess: 47

Yes, the number is 47

Choose a program to run:

1. Classify Money into Coins

2. Lottery Game

3. Guessing Numbers Game

4. Exit

Enter your choice (1-4): 4

Exiting...