Institute of Computer Technology
B. Tech Computer Science and Engineering

Sub: (2CSE403) FUNCTIONAL PROGRAMMING

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SEM: CSE 3-B (BATCH 44)

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Practical 2

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

INPUT:

```
amount = float(input("Enter an amount in double, for example 11.56: "))

cents = int(round(amount * 100))

dollars = cents // 100
cents %= 100

quarters = cents // 25
cents %= 25

dimes = cents // 10
cents %= 10

nickels = cents // 5
cents %= 5

pennies = cents

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")
```

OUTPUT:

```
PS C:\Users\TUF> & C:/Users/TUF/AppData/Local/Programs/Python/Python313/python.exe c:/Users/TUF/Desktop/FP/prac2/prac2.1.py
Enter an amount in double, for example 11.56: 12.32
Your amount 12.32 consists of
12 dollars
1 quarters
0 dimes
1 nickels
2 pennies
PS C:\Users\TUF>
```

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

INPUT:

```
PS C:\Users\TUF> & C:/Users/TUF/AppData/Local/Programs/Python/Python313/python.exe c:/Users/TUF/Desktop/FP/prac2/prac2.2.py
Enter a two-digit number: 18
Lottery number: 83
Good! You won $2,000!
PS C:\Users\TUF>
```

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
```

INPUT:

```
import random

def guess_number():
    magic_number = random.randint(0, 100)
    print("Guess a magic number between 0 and 100")

    while True:
        try:
            guess = int(input("Enter your guess: "))
            if guess < 0 or guess > 100:
                print("Please enter a number between 0 and 100.")
                continue
```

```
            if guess < magic_number:
                print("Your guess is too low")
            elif guess > magic_number:
                print("Your guess is too high")
            else:
                print(f"Yes, the number is {guess}")
                break
        except ValueError:
            print("Invalid input. Please enter an integer.")

if __name__ == "__main__":
    guess_number()
```

OUTPUT:

```
PS C:\Users\TUF\Desktop\FP> & C:/Users/TUF/AppData/Local/Programs/Python/Python313/python.exe c:/Users/TUF/Desktop/FP/prac2
/PRAC2.3.PY
Guess a magic number between 0 and 100
Enter your guess: 7
Your guess is too low
Enter your guess: 18
Your guess is too low
Enter your guess: 20
Your guess is too low
Enter your guess: 50
Your guess is too low
Enter your guess: 78
Your guess is too high
Enter your guess: 60
Your guess is too low
Enter your guess: 75
Your guess is too high
Enter your guess: 70
Your guess is too low
Enter your guess: 72
Your guess is too low
Enter your guess: 73
Yes, the number is 73
PS C:\Users\TUF\Desktop\FP>
```