



# United International University

## Department of CSE

CSE 1112: Structured Programming Language Lab

Final Examination | Fall 2022

Time: 2 Hours | Full Marks: 25

CLASS ID:

NAME:

1. Eleven is overwhelmed by the recent outbreak of Demogorgon unleashed by Vecna. Every Demogorgon is marked with a specific number. Write a Program that will detect all Demogorgon Numbers in between TWO Ranges given by Eleven. **[8]**

Demogorgon numbers are those numbers that have the following CONDITIONS:

**[CONDITION 1]** Sum of ODD digits is less than the Sum of EVEN digits in that number.

**[CONDITION 2]** It is a Prime number

Write following functions to solve this problem:

```
int DemogorgonNumber (int a): if DEMOGORGON returns 1 else returns -1
int checkerFunc1 (int a): if CONDITION No. 1 is true returns 1 else returns -1
int primeChecker (int a): if CONDITION No. 2 is true returns 1 else returns -1
```

Sample Input	Sample Output
130 430	163 181 223 241 263 281 283 383 401 421
1005 1250	1061 1063 1163 1181

2. WAP that takes n as input and print up to nth Fibonacci number with following special character after each of the number. **[YOU MUST USE A RECURSIVE FUNCTION]** **[8]**
- If Even Then \$
  - If Odd Then #
  - If 0 Then &

*Note that after the last number there will not be any special character*

Sample Input	Sample Output
5	0 & 1 # 1 # 2 \$ 3
7	0 & 1 # 1 # 2 \$ 3 # 5 # 8

- 3 Ms. Isabella wants to find out her best 3 loyal customers. She has the following data of the customer:
- Customer ID
  - Name
  - Birthday: dd/mm/yyyy
  - House: Gryffindor, Slytherin
  - Purchase Cost of Last 3 Months
- [9]**

For Example, 11034, Christopher Nolan, 11/06/1945, Gryffindor, [40, 56, 67]

Loyal Customer will be awarded to the person with the highest average purchase value from each House with the following additional criteria:

- If House is Gryffindor, he/she must contain “**est**” in his name.
- If House is Slytherin, he/she must contain “**rus**” in her name.

Write a Program to assist Ms. Isabella. Your Program must contain a structure that will be able to contain the data of a customer. If There is No Loyal Customer from a House Print Nil. Else Print the Customer Name, Birthday, and Average Purchase.

**NOTE THAT** - You must write a function named **int substringChecker (char \*mainString, char \*searchString)** and utilize that while searching a certain sub-string in another string. **[The Function must be called by Reference only]**

Input	Output	Explanation
<p>Num of Customer: 3</p> <p>Customer 1: Name: Harry Potter Birthday: 11/01/1985 House: Gryffindor Purchase: 22 45 65</p> <p>Customer 2: Name: Albus Severus Potter Birthday: 11/04/1987 House: Slytherin Purchase: 22 45 65</p> <p>Customer 3: Name: Hermione Grenzer Birthday: 11/04/1985 House: Gryffindor Purchase: 21 42 65</p> <p>Customer 4: Name: Severus Snape Birthday: 23/04/1967 House: Slytherin Purchase: 34 41 95</p> <p>Customer 5: Name: Draco Malfoy Birthday: 11/04/1985 House: Slytherin Purchase: 100 41 45</p>	<p>List of Loyal Customers:</p> <p>Gryffindor: Nil</p> <p>Slytherin: Severus Snape   23/04/1967   56.67</p>	<p>Both the Gryffindor Customers Violate the constraint that he/she must contain “<b>est</b>” in his name. Thus NIL.</p> <p>In Slytherin, the average purchase value is as follows:</p> <p>Draco Malfoy   62 Severus Snape   56.67 Albus Severus Potter   44</p> <p>Though Draco has the highest average, he doesn’t have “<b>rus</b>” in his name.</p> <p>Thus, the Loyal customer from Slytherin is Severus Snape.</p>