Course Title: SPL Lab	**Course Code: CSE 1112**	**Credit Hours: 3.0**
Trimester & Year: Summer 2022	**Section: D**	**AZ**

Evaluation -02

Total Marks: 20   Time: **30** min

Harry, Ron and Harmione are hiding from the overwhelming attacks of the Death Eaters and hiding from one place to another in the quest of Horcruxes. The Death Eaters are the fellows of Lord Voldemort trying to reveal the secret hideouts. Death Eaters communicate with each other using a Cursed Number every night. Now Help Hermione to detect all *CURSED* **NUMBER** in between **TWO Ranges**.

Cursed numbers are those numbers which have following CONDITIONS:

1. Starts with 7 or 1 and doesn't Ends with 9 or 2

2. The number has Odd digit in Even Position and Even Digit in Odd position

3. is a Strong number and not a Defective number.

4. Has less atleast 2 digits and sum of the square of the digits is divisible by 7.

Write following functions to solve this problem:

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int sectumSempra (int a): if CURSED returns 1 else returns -1

int checkerFunc1 (int a): if CONDITION No. 1 is true returns 1 else returns -1

int checkerFunc2 (int a): if CONDITION No. 2 is true returns 1 else returns -1

int checkerFunc3 (int a): if CONDITION No. 3 is true returns 1 else returns -1

int checkerFunc4 (int a): if CONDITION No. 4 is true returns 1 else returns -1

int strongChecker (int a): if STRONG returns 1 else returns -1

int defectiveChecker (int a): if Defective returns 1 else returns -1

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*STRONG NUMBERS: Strong number is a number whose sum of all digits' factorial is equal to the number 'n'. So, to find a number whether its strong number, we have to pick every digit of the number like the number is 145 then we have to pick 1, 4 and 5 now we will find factorial of each number i.e, 1! = 1, 4! = 24, 5! = 120. Now we will sum up 1 + 24 + 120 so we get 145, that is exactly same as the input given, So we can say that the number is strong number.

*DEFICIENT/DEFECTIVE NUMBERS: A deficient number or defective number is a number n for which the sum of divisors $\sigma(n){<}2n$, or, equivalently, the sum of proper divisors (or aliquot sum) $s(n){<}n$. The value $2n - \sigma(n)$ (or $n - s(n)$) is called the numbers deficiency.

Examples: The first few deficient numbers are: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 21, 22, 23, 25, 26, 27, …

As an example, consider the number 21. Its divisors are 1, 3, 7 and 21, and their sum is 32. Because 32 is less than 2 × 21, the number 21 is deficient. Its deficiency is 2 × 21 − 32 = 10.