[redacted]

Question 2 : (35 points) You are asked to design a confidential communication system that decodes an encrypted text. For this purpose please follow the steps below:

1. Ceate a random integer row vector (say x) having 4 integer elements. Each element should be in the interval [0, 9].
2. Ask the user to enter the last 5 digits of the student number with a message saying: “Enter the last 5 digits of your number.”
3. Put these two numbers consecutively, first randomly followed by student number.
4. Generate a key vector having four elemets. The encrypted text is decrypted with a special key in the system. Each digit of the key consists of numbers 2 or 3. If a digit is not 2 or 3, write a simple message like “key is not proper.”
5. Calculate the length of the encrypted text and the sum of the value in each digit of the key. They must be equal to each other. If they are not equal, write a simple message like “the key and encrypted text are not compatible and cannot be resolved.”
6. Split the encrypted text using key. Each digit (2 or 3) in the key shows how to split the encrypted text.
7. Find the ASCII equivalents of each piece in the encrypted text and write it to the screen.

Example Scenario is given below.

The last 5 digits of the student number: 70344
Rondom number: 8713
Encrypted Text: 871370344
Key: 2223
Check Statement 4.
All digits in key consist of 2 or 3.
Check Statement 5.
Length of Encrypted Text: 9
Sum of digits in key: 2 + 2 + 2 + 3 = 9

Grouping of encrypted text with respect to key.

```
Key:                2   2   2    3
                    ↓   ↓   ↓    ↓
Encrypted text:    87  13  70  344
                    ↓   ↓   ↓    ↓
Encrypted text:    87  13  70  255

ASCII meaning:     W       F    ÿ
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Decrypted text is W F ÿ