Indian Institute of Information Technology Vadodara

Lab Assignment 1- 2

CS162: Introduction to Data Structures Laboratory

1. Reverse a given integer.
   ```
   Ex. - Input: 7458965
        Output:- 5698547
   ```

2. Remove duplicate letters from string and return the new string with all unique characters in lexicological order.
   ```
   Ex. - Input: "DataStructure"
        Output:- "DatSruce"
   ```

3. Implement strstr() i.e. return the index of first occurrence of substring if present otherwise return -1.
   ```
   Ex. - Input: "DataStructure", "tru"
        Output: 5
   Ex. - Input: "DataStructure", "true"
        Output: -1
   ```

4. Count no. of zeros at the end of n! i.e. (n factorial).
   ```
   Ex. - Input: 5   (5! = 5*4*3*2*1 = 120)
        Output:- 1
   ```

5. Count the number of '1' bits in binary string.
   ```
   Ex. - Input: "1010101"
        Output:- 4
   ```

6. Valid email address (must contain "@" symbol) i.e. return True if email address is valid otherwise return False.
   ```
   Ex. - Input: 2020@.gmail.com
        Output:- False
   Ex. - Input: 2020@iiitvadodara.ac.in
        Output:- True
   ```

7. String to integer (including cases like "00123")
   ```
   Ex. - Input: "0124510"
        Output:- 124510
   ```

8. Given a string s and an integer k, reverse the string in batches of k.
   ```
   Ex. - s="abcdefgh" ; k = 3 ; return "cbafedgh"
   Ex. - s="abcdefghi" ; k = 3 ; return "cbafedihg"
   ```

9. Determine if two strings are isomorphic. Two strings `s` and `t` are isomorphic if the characters in `s` can be replaced to get `t`

```
Input: s = "egg", t = "add"
Output: True   (replace e -> a and g -> d)

Input: s = "foo", t = "bar"
Output: False

Input: s = "paper", t = "title"
Output: True
```

10. Pattern: Inverted Pyramid

```
* * * * * * * * *
  * * * * * * *
    * * * * *
      * * *
        *
```