Jadavpur University
Session 2024-25, Odd Semester
Computer Programming and Numerical Methods

Assignment – IV

1. A positive integer is entered through the keyboard, write a C function to find the binary equivalent of this number using recursion.

2. Write a recursive function which returns the sum of individual digits of a number passed as argument.

3. Write a program that reads a line and converts it into all capitals without using any string library function. (input string may also contain capital letters)

4. Write a program to count the number of occurrences of any two vowels in succession in a line of text.

5. Write a program that converts a string like “123” to integer 123. Do not use any string library function.

6. Write a C program which dynamically allocates memory for two matrices, orders of which is given by the user, and reads the values of elements of the matrices from the user. The program creates a third matrix which is obtained by multiplying the two input matrices. Your program should check for conformity of multiplication of the two matrices given by the user.

7. Write a C program which accepts an integer and creates a string representation of the integer value. Do not use any string library function. [Example: If the argument is integer 1234 the program should form the string “1234”]

8. Write a C program which accepts a string from user and checks whether it is palindrome or not. Do not use any string library function. [Example of a palindrome string: "abcba", "abba"]

9. Write a C program which accepts a string from user and counts the number of words in it. Do not use any string library function.

10. Write a C function which accepts a string str1 and returns a new string str2 which is str1 with each word reversed. Do not use any string library function.

11. Write a function squeeze(s,c) which removes all occurrences of the character c from the string s.

12. Write the function strend(s,t), which returns 1 if the string t occurs at the end of the string s, and zero otherwise.

13. Write a C function convert(int n, char *s, int w) that accepts three arguments. The function stores the string representation of n in s. The third argument w is a minimum field width; the converted number must be padded with blanks on the left if necessary to make it wide enough. **[OPTIONAL]**

14. Write a C function which takes as argument two strings str1 and str2. It creates a third string str3 which is formed by taking alternating characters from each string and returns it. Example: If the two string arguments are “abcd” and “efgh” the function should return the string “aebfcgdh”, If the two string arguments are “abcd” and “efghijkl” the function should return the string “aebfcgdhijkl”. Do not use any string library function. **[OPTIONAL]**

15. Write a C function which takes as argument two strings str1 and str2 and an integer i. It returns a new string which is obtained by appending str2 from the ith character in str1. Example: If the two string arguments are “abcd” and “pqrs” and i is 2, then the function should return the string “abpqrs”. Do not use any string library function. **[OPTIONAL]**