Graphic Era HILL UNIVERSITY
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Term Evaluation (Even) Semester Examination March 2025

Roll no: 2494027

Name of the Program: B.Tech
Semester: II
Name of the Course: Programming for Problem solving
Course Code: **TCS201**
Time: 90 Minutes
Maximum Marks: 50

Note:

(i) Answer **all the questions except Que(2)** by choosing ***any one of the sub-questions***.
(ii) All 5 sub-questions in **Que(2)** are compulsory.
(iii) Each question carries 10 marks.

Q1 **(10 marks)**

(a) Describe the various ways to read a string in 'C' language with their suitable syntax. Write a 'C' program to read an alphanumeric string. Display the string by converting digits into words.

Sample Input:	**Sample Output:**
Input String: Pincode of my city is 248001	Output String: Pincode of my city is two four eight zero zero one

CO1

OR

(b) Write a code in 'C' to read a multiword string. Input two indexes a and b. Reverse the string starting from index a to index b. Print the final string.

Sample Input:	**Sample Output:**
Input String: Delhi is the capital of India Input index(a): 14 Input index(b): 20	Output String: Delhi is the latipac of India

Q2 **(10 marks)**

Find the Output with an explanation. Considering *int* is getting 2 Bytes of space in memory.

CO1
CO3

1.
```
#include<stdio.h>
int main()
{
   char str[]= "how are you?";
   int i, j, t, len;
   len = strlen(str);
   for(i=0, j=len; i<j; i++, j--)
   {
      t = str[i];
      str[i] = str[j];
      str[j] = t;
   }
   printf("%s", str);
}
```

2.
```
#include<stdio.h>
int main()
{
   int arr[]={0, 1, 2, 3, 4, 5, 10};
   static int x, y, k;
   int *p = arr;
   for(k=0; k<7; k++)
   {
      if(*(p+k)%2==0 && *(p+k)%5==0)
         ++x;
      else
         ++y;
   }
   printf("%d %d %d", x, y, x-y);
```

		return 0; }	

	3.
	#include<stdio.h>
	int main()
	{
	int a = 12, b = 4, *p1, *p2;
	int x, y;
	p1 = &a;
	p2 = &b;
	x = *p1 * *p2 - 6;
	y = 4 * - (*p2) / *p1 + 10;
	printf("%d %d", x, y);
	return 0;
	}
		4.
		#include<stdio.h>
		int main()
		{
		char str[] = {'a', 'b', '\0', 'x', 'y', '\0'};
		printf("%d", strlen(str));
		printf("%d", sizeof(str));
		return 0;
		}	

	5.
	#include<stdio.h>
	int main()
	{
	char str1[20] = "Hello";
	char str2[20] = "World";
	printf("%s", strcpy(str2, strcat(str1, str2)));
	return 0;
	}		

Q3		**(10 marks)**	
(a)	Draw a flowchart to read a multiword string. Copy this string to another string without spaces. Display the final copied string. **Sample Input:** / **Sample Output:** Input String (str1): my city is a beautiful valley Output String(str2): mycityisabeautifulvalley		CO2
	OR		
(b)	Draw a flowchart to input elements into a matrix of size *mXn*. Print maximum element of each column of matrix. **Sample Input:** / **Sample Output:** Number of rows: 3 Number of columns: 4 Matrix elements: 34 56 12 89 23 45 78 38 15 21 67 92 Maximum of column 1: 34 Maximum of column 2: 56 Maximum of column 3: 78 Maximum of column 4: 92		
Q4		**(10 marks)**	
(a)	To solve a mathematical problem Aman inputted elements into a matrix of size *mXn*. Write a 'C' program to help him to check whether he created Sparse matrix or not. **Note**: Sparse matrix is a matrix where most of the elements are zero. **Sample Input:** / **Sample Output:** Inputted Matrix: 0 1 0 0 2 0 0 5 0 3 0 0 Sparse Matrix		CO1

	0 0 0 0 7 2 0 0		
	Inputted Matrix: 0 1 8 6 2 4 0 5 9 3 0 0 0 0 6 0 7 2 0 0	Not a Sparse Matrix	
	OR		
(b)	Write a 'C' program to input elements into a matrix of size *mXn*. Input two rows index and interchange element to both rows.		
	Sample Input:	**Sample Output:**	
	Number of rows: 5 Number of columns: 3 Elements of matrix: 2 5 7 **4 6 8** 1 7 9 **3 5 2** 8 9 3 Row Index1: 1 Row index2: 3	Final matrix after interchange: 2 5 7 **3 5 2** 1 7 9 **4 6 8** 8 8 3	
Q5		**(10 marks)**	
(a)	Describe various types of pointers available in 'C' programming language. How call by reference is different with call by value? Explain with an example.		
	OR		
(b)	Write a 'C' program to read two 1D array. Create a new array by finding the intersection of two inputted array. (access elements of array using pointer)		CO3
	Sample Input:	**Sample Output:**	
	Number of elements in arry1: 4 Elements of array1: 2 4 6 8 Number of elements in arry2: 6 Elements of array2: 3 4 6 8 9 5	Elements of output array(arry3): 4 6 8	