Manipal University Jaipur
CS 1001 Problem Solving Using Computers
B.Tech (First Year), Semester II,
Session Jan 2023 – May 2023
Assignment II
Date of Submission: 17th April, 2023 , Mode : Hard Copy

Q1.	Complete the program as per description given below
	#include <stdio.h>
	int main()
	{
	int data[100], N;
	/*
	1. Read the Value of N from user
	2. Read 'N' number of Elements of array 'data' from user
	3. Print the elements of array 'data' after removing duplicate elements
	*/
	}// End of Question 1
		Sample Input Output
		
		Input : N = 10, Elements of array 'data' = { 10, 4, 5, 6, 5 , 10, 8, 4, 9, 7}
		
		Output: 10, 4, 5, 6, 8, 9, 7

Q2.	Write a program as per description given below #include <stdio.h> int main() { int M1, D1, Y1; /* Suppose M1, D1 and Y1 represents month . day and year of date 1 */ int no_of_days; /* The number of days to be added in date 1*/ /* 1. Read the values of M1, D1 and Y1 from user. Assume the read values are correct. 2. Read the value of no_of_days from user 3. Printout the attributes of new dates after adding and subtracting the no_of_days. */ } End of Question 2	**Sample Input Output** Input: M1 = 4 D1 = 10 Y1 = 2023 (Note : Date is 10th April 2023) no_of_days = 3 Date after 3 days = 4/13/2023 Date before 3 days = 4/7/2023
Q3.	Write a program which reads the attributes of date in dd-mm-yyyy format and prints out with proper month, day and year details. Use Switch statement.	**Sample Input Output** Input : dd = 19 mm =04 yyyy = 2023 Output: 19th April, 2023

Q4.	Write a program in 'C' using the description given below:
	#include <stdio.h>
	int main()
	{
	int data1[100], N1;
	int data2[100], N2;
	/*
	1. Read 'N1' elements of array 'data1' from user.
	2. Read 'N2' elements of array 'data2' from user.
	3. Add only those elements of 'data2' at end of 'data1' which does not exist in 'data1'.
	4. Display the elements of 'data1' after updating.
	*/
	}// End of Question 4
		Sample Input Output
		
		Input
		N1 = 4
		data1 = 10, 6, 8, 4
		
		N2 = 3
		data2 = 10, 19, 5
		
		Output
		N1 = 6
		data1 = 10, 6, 8, 4, 19, 5

Q5.	Write a program in 'C' to check whether a given number 'N' read from user is palindrome or not. [Palin Drome Number is same from both ends e.f. 1001, 2332, 77, 171 etc.]	**Sample Input Output** Input N = 123 Output 'Not a Palindrome' N = 101 Output 'Is a Palindrome Number'
Q6.	Write a program in 'C' which reads 's1' , 's2' and 's3' as sides of a triangle and prints out the one of the following messages 1. Invalid Triangle if sum of any two is less than third	**Sample Input Output** Input s1 = 10 , s2 = 4 , s3 = 4 Output

	2. Valid triangle and Scalene if sides represent a valid triangle and all sides are unequal 3. Valid triangle and Isosceles if sides represent a valid triangle and any two sides (not all) are equal 4. Valid Triangle and Equilateral if sides represent a valid triangle and all sides are equal	'Not a Valid Triangle' Input s1 = 10 , s2 = 12 , s3 = 4 Output 'Valid Triangle : Scalene'

Q7.	Write a program in 'C' which inserts a string into another string from a given index. Complete the program as per specification given below
	
	#include <stdio.h>
	int main()
	{
	char str1[100], str2[100];
	int index;
	/*
	1. Read the values of str1 and str2 using gets() function;
	2. Read the value of 'index' from user. Assume 0 <= 'index' < L is true where 'L' is length of str1.
	3. Insert all characters of 'str2' in 'str1' from 'index' onwards.
	4. Display the updated value of 'str1' on screen.
	}// End of QNo 7
		Sample Input Output
		
		Input
		
		str1 = "New Delhi"
		str2 = "Ram"
		index = 2
		
		Output
		str1 ="NeRamw Delhi"

Q8.	Write a program in 'C' which checks whether a string 'str1' contains another string 'str2' or not. If true then display the corresponding indexes also.
	#include <stdio.h>
	int main()
	{
	char str1[100], str2[100];
	int index;
	/*
	1. Read the values of 'str1' and 'str2' using gets() function;
	2. Check whether str2 exists in str1 or not. Alternatively whether 'str1' contains 'str2' or not.
	3. If true display the corresponding indexes also.
	}// End of QNo 8
		Sample Input Output
		
		Input
		
		str1 = "New Delhi"
		str2 = "ew"
		
		Output
		The string "New Delhi" contains string "ew" from index 1 to 2.

Q9.	Implement 'Insertion Sort' algorithm for sorting an array 'Data' of 'N' elements. Similarly implement 'Selection Sort' algorithm also. Wikipedia Link 1. Insertion Sort : https://en.wikipedia.org/wiki/Insertion_sort 2. Selection Sort : https://en.wikipedia.org/wiki/Selection_sort Read the algorithms and implement these in 'C' language.	
Q10.	Write a Program in 'C' which reads a number 'N' from user and prints out whether the number is Armstrong number or not. An Armstrong number is a number whose sum of digits raised to power 3 is equal to number itself. For example, 371 is a Armstrong Number as 371 = 3^3 + 7^3 + 1^3 = 27 + 343 + 1 = 371.	

Q11.	Implement the following 'C' code as per specification given below:
	#include <stdio.h>
	int main()
	{
	/*
	1. Declare a char array named 'Name' with max size 100.
	2. Read the value of 'Name' from user using gets() function
	3. Display the count of Each Character of 'Name' on Screen
	*/
	}// End of Q11
		Sample Input Output
		Input
		Name = "Hello How Are You"
		H, count = 2
		e, count = 2
		l, count = 2
		o, count = 2
		w, count = 1
		A, count = 1
		R, count = 1

Q12.	Read the value of 'x' and 'N' and compute the sum of the series. x – x^3/ !3 + x^5/!5 ……. N Terms	
Q13.	Discuss and predict the output of following program segments.	

main( ) {	main( ) {	main() {

		int i ;
		for (i = 1 ; i <= 5 ; printf (
		"\n%c", 65)) ;
		i++ ;
		}
			while ('1' < '2')
			printf ("\nIn while loop") ;
			}
				int i = 0;
				for(; i<=5; i++);
				printf("%d", i);
				}	

		main( )
		{
		int x = 1 ;
		while (x == 1)
		{
		x = x - 1 ;
		printf ("\n%d", x) ;
		}
		}
			main( )
			{
			char x;
			for (x = 0 ; x <= 255 ; x++)
			printf ("\nAscii value %d
			Character %c", x, x) ;
			}
				main()
				{
				short int i = 0;
				for(i<=5 && i>=-1;
				++i; i>0)
				printf("%hu,", i);
				}	

		main()
		{
		int i = 5;
		while(i-- >= 0)
		printf("%d,", i);
		i = 5;
		printf("\n");
		while(i-- >= 0)
		printf("%i,", i);
		while(i-- >= 0)
		printf("%d,", i);
		}
			main()
			{
			int i = 0, j = 0;
			while (i < 2)
			{
			l1 : i++;
			while (j < 3)
			{
			printf("Loop\n");
			goto l1;
			}
			}
			}
				main()
				{
				int x;
				for(x=-1; x<=10;
				x++)
				{
				if(x < 5)
				continue;
				else
				break;
				printf("Manipal");
				}
				}	

		main()
		{
		int i=1;
		for(;;)
		{
		printf("%d\n", i++);
		if(i>10)
		break;
		}
		}
			int main()
			{
			int x;
			for(x=-1; x<=10; x++)
			{
			if(x < 5)
			continue;
			else
			break;
			printf("Manipal");
			}
			return 0;
			}
				main( )
				{
				int x = 4, y = 0, z ;
				while (x >= 0)
				{
				x-- ;
				y++ ;
				if (x == y)
				continue ;
				else
				printf (
				"\n%d %d", x, y) ;
				}
				}	