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Internal Assessment Test 3 – APRIL 2023

Sub:	Principles of Programming using C					Sub Code:	22POP13	Branch:	CSE	
Date:	03/04/2023	Duration:	90 mins	Max Marks:	50	Sem / Sec:	I / [All sections]			OBE

	Answer any FIVE FULL Questions	MARKS	CO	RBT

1	Explain how parameters are passed to a function in C with an example.
	Ans
	Function
	It is a building block that contains set of programming statements to perform a particular task.
	Functions can be invoked in two ways: Call by Value or Call by Reference. These two ways are generally differentiated by the type of values passed to them as parameters.
	
	Call By Value: In this parameter passing method, values of actual parameters are copied to function's formal parameters and the two types of parameters are stored in different memory locations. So any changes made inside functions are not reflected in actual parameters of the caller.
	
	Call by Reference: Both the actual and formal parameters refer to the same locations, so any changes made inside the function are actually reflected in actual parameters of the caller.
	
	Call By Value
	`#include<stdio.h>`
	`void swapx(int x, int y);`
	`int main()`
	`{`
	`int a = 10, b = 20;`
	`swapx(a, b);`
	`printf("a=%d b=%d\n", a, b);`
	`return 0;`
	`}`
	`void swapx(int x, int y)`
	`{`
	`int t;`
	`t = x;`
	`x = y;`
	`y = t;`
	`printf("x=%d y=%d\n", x, y);`
	`}`
	
	Call by Reference
	`#include <stdio.h> void swapx(int*, int*); int main()`
	`{`
	`int a = 10, b = 20;`
	`swapx(&a, &b);`
	`printf("a=%d b=%d\n", a, b);`
	`return 0;`
	`}`
		10	CO4	L2

	void swapx(int* x, int* y)
	{
	int t;
	t = *x;
	*x = *y;
	*y = t;
	printf("x=%d y=%d\n", *x, *y);
	}			

2	Define Recursion. Explain the working of recursion in C with an example.
	Recursion:
	In programming terms, a recursive function can be defined as a routine that calls itself directly or indirectly.
	#include<stdio.h>
	
	int fact(int);
	int main()
	{
	int x,n;
	printf(" Enter the Number to Find Factorial :");
	scanf("%d",&n);
	
	x=fact(n);
	printf(" Factorial of %d is %d",n,x);
	
	return 0;
	}
	int fact(int n)
	{
	if(n==0)
	return(1);
	return(n*fact(n-1));
	}
	This Program prompts user for entering any integer number, finds the factorial of input number and displays the output on screen. A recursive user defined function is used to perform the task. Fact function calls itself in a recursive manner to find out the factorial of input number.
		10	CO4	L2

3	Write a C program to create a structure called Employee with members emp_name, SSN and Salary. Read the details for n employees and display the details of the employee whose salary is above 50000.
	#include <stdio.h>
	
	struct Employee
	{
	char emp_name[32];
	float salary;
	int SSN;
	};
	int main()
	{
	struct Employee e[50];
	int n,i;
	printf("enter how employees details to be entered");
	scanf("%d",&n);
	for(i=0;i<n;i++)
	{
	printf("enter employee name");
	scanf("%s",e[i].emp_name);
		10	CO5	L3

	printf("enter employee SSN");
	scanf("%d",&e[i].SSN);
	
	printf("enter employee salary");
	scanf("%f",&e[i].salary);
	}
	printf("\n**********\n");
	for(i=0;i<n;i++)
	{
	if(e[i].salary>50000)
	printf("Employee name: %s\nEmployee SSN: %d\nEmployee Salary: %f",e[i].emp_name,e[i].SSN,e[i].salary);
	
	}
	}			

4	Define String. Explain the following operations on strings without using built in functions. i)string compare ii)string concatenation iii)string reverse	10	CO3	L2
5	What is structure? Explain the declaration and initialization of structure with an example.	5	CO5	L2
	Define Pointers. Explain how pointers are declared and initialized.	5	CO5	L2
6	Write a C program to find factorial of a number using functions.	5	CO4	L3
	Write a C program to find the sum average and mean of n integers using pointers.	5	CO5	L3