



Aug-Dec 2019: END SEMESTER ASSESSMENT (ESA) B.TECH.

UE15/18CS151 – Problem Solving with C

Time: 3 Hrs

Answer all questions in the same order

Max Marks: 100

1	a)	Explain Program Development Life cycle of a C Program with gcc commands to execute each steps.	6
	b)	Identify if any errors, if not write the output of the below codes with appropriate reason? i) #include<stdio.h> int main(){ int a = 10; a++ == 10 a++ == 11; printf("a=%d",a); return 0; } ii) #include<stdio.h> int main(){ int x; for (;x==10;){ printf("x=%d ",x); x--; }return 0; }	3 +
	c)	List any two differences between Array and Pointer.	4
	d)	Write a program to count the number of characters in a line.	4
2.	a)	Write a program to display n elements from an array of integers in the reverse order using function.	5
	b)	What does the function do? Show stackframes for the function call, func(123)? #include<stdio.h> int func(int n){ static int count=0; if (n>0){ count++; func(n/10); }else return count; }	5
	c)	Comment about the below functions: i) int scanf(const char *format, ...); ii) char *fgets(char *str, int n, FILE *stream); iii) char *strtok(char *str, const char *delim);	6
	d)	Write the output of the below code. i) #include <stdio.h> int fun(int arr[]) { arr = arr+1; printf("%d %d ", arr[0],arr[1]); } int main() { int arr[3] = {11, 22}; fun(arr); printf("%d %d ", arr[0],arr[-1]); return 0;}	4
3.	a)	Given employee structure definition. Write a function to display the employee name, whose salary is equal to 50,000. typedef struct employee{ char emp_name; int emp_id; long emp_salary;	6

		<pre> }emp_t; void disp_empid(emp_t e[],int n){ //TODO } </pre>	
	b)	Describe the below with code snippets. i) Memory leak. ii) Memory Allocation using malloc.	6
	c)	Write a program to concatenate two strings without using builtin functions.	4
	d)	Name two searching and sorting techniques.	4
4.	a)	Given the binarysearch interface. Complete the implementation by filling the todo part. <pre> int binarysearch(int a[],int low, int high, int key){ int pos=-1; int found=0; while(low<=high && found==0){ int mid=(low+high)/2; //TODO } //TODO; } </pre>	6
	b)	Fill the todo part, with appropriate instructions to complete the required code: <pre> #include<stdio.h> typedef struct employee{ int emp_id; char name[20]; char dept[10]; }Emp; int main(){ Emp *s; //TODO: To allocate the memory for 5 employee's //TODO: To change the size of the array and allocate memory to accommodate 10 employee's //TODO: To deallocate the memory return 0; } </pre>	4
	c)	Given a file sample.dat, which has integers as given in the below example. Write a program to read the integer values and display on the standard output. Example: sample.dat: 111 222 333 444 and on standard output display: 111 222 333 444	6
	d)	With an example explain callback.	4
5.	a)	i) What is the output? <pre> #include<stdio.h> #define sqr(x) x*x #define cube(x) sqr(x)*x #define MAX 5 int main(){ printf("Result is %d\n",cube(MAX)); #define MAX 3 printf("Res is %d\n Result is %d",sqr(MAX), cube(MAX)); #define MAX 2+2 printf("Res is %d\n Result is %d",sqr(MAX), cube(MAX)); return 0; } </pre>	5
	b)	What is enum in c? Write a program to declare an enum type year containing all months in a year and display second month.	5
	c)	Explain any two storage classes with one example for each.	6
	d)	Write a program to find the sum of all numbers provided in the command line.	4