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| **Lab-4** | **A** | **Write following programs in C. (Basic)** |
|  |  | **1.** Print “Hello World”.  **Code:-**  *#include*<stdio.h>  void main()  {      printf("Hello World");  }  **2.** Print your address i) using single printf ii) using multiple printf.  **Code:-**  **i)**  *#include*<stdio.h>  void main()  {      printf("Rajkot-Morbi Hwy,Rajkot,Gujarat 363650");  }  **ii)**  *#include*<stdio.h>  void main()  {      printf("Rajkot-Morbi Hwy,");      printf("Rajkot,");      printf("Gujarat 363650");  }  **3.** Print addition of 2 numbers. (with & without scanf)  **Code:-**  **i)**With Scanf  *#include*<stdio.h>  void main()  {      int n1,n2,sum;      printf("Enter The Number n1 : ");      scanf("%d",&n1);      printf("Enter The Number n2 : ");      scanf("%d",&n2);      sum=n1+n2;      printf("The Sum is : %d",sum);  }  **ii)**Without Scanf  *#include*<stdio.h>  void main()  {      int n1=10,n2=20,sum;      sum=n1+n2;      printf("The Sum is : %d",sum);  }  **4.** Print average of three numbers. (with & without scanf)  **Code:-**  **i)**With Scanf  *#include*<stdio.h>  void main()  {      int n1,n2,n3,Avg;      printf("Enter The Number n1 : ");      scanf("%d",&n1);      printf("Enter The Number n2 : ");      scanf("%d",&n2);      printf("Enter The Number n3 : ");      scanf("%d",&n3);      Avg=(n1+n2+n3)/3;      printf("The Average is : %d",Avg);  }  **ii)**Without Scanf  *#include*<stdio.h>  void main()  {      int n1=10,n2=20,n3=30,Avg;      Avg=(n1+n2+n3)/3;      printf("The Average is : %d",Avg);  }  **5.** Print area of circle. (pie\*r\*r)  **Code:-**  *#include*<stdio.h>  void main()  {      float Area,r,Pi=3.14;      printf("Enter The Radius : ");      scanf("%d",&r);      Area=Pi\*r\*r;      printf("The Area Of The Circle is %f : ",Area);  } |
| **Lab-4** | **B** | **Write following programs in C. (Basic)** |
|  |  | **1.** Pint area of triangle. ((height\*base)/2)  **Code:-**  *#include*<stdio.h>  int main()  {      int Height,Base;      printf("Enter The Value of Height=");      scanf("%d",&Height);      printf("Enter The Value of Base=");      scanf("%d",&Base);      printf("Area Of Triangle is %d",(Height\*Base)/2);  *return* 0;  }  **2.** Print simple interest. (principal\*roi\*time period)/100  **Code:-**  *#include*<stdio.h>  int main()  {      float Principle,ROI,Timeperiod;      printf("Enter The Value of Principle =");      scanf("%f",&Principle);      printf("Enter The Rate Of Interest =");      scanf("%f",&ROI);      printf("Enter The Time Period =");      scanf("%f",&Timeperiod);      printf("Simple interest is %f",(Principle\*ROI\*Timeperiod)/100);  *return* 0;  }  **3.**Print temperature from Fahrenheit to Celsius. (Formula: c=(((f-32)\*5))/9)  **Code:-**  *#include*<stdio.h>  int main()  {      float f;      printf("Enter The Value of f=");      scanf("%f",&f);      printf("Celsius c = %f",(((f-32)\*5))/9);  *return* 0;  }  **4.** Convert seconds into hours, minutes & seconds and print in HH:MM:SS. [e.g. 10000 seconds = 02:46:40)]  **Code:-**  *#include*<stdio.h>  int main(){      int total\_sec,sec,min,hour;      printf("enter the second : ");      scanf("%d",&total\_sec);        hour=total\_sec/3600;      total\_sec=total\_sec%3600;      min=total\_sec/60;      sec=total\_sec%60;      printf("hours=%d min=%d second=%d",hour,min,sec);  *return* 0;  }  **5.** Convert number of days into year, week & days. [e.g. 375 days mean 1 year, 1 week and 3 days]  **Code:-**  *#include* <stdio.h>    int main()  {      int NoOfDays, years, weeks, days;      printf("\n Please Enter the Number of days  :  ");      scanf("%d", &NoOfDays);      years = NoOfDays / 365;      weeks = (NoOfDays % 365) / 7;      days = (NoOfDays % 365) % 7;      printf("\n Years  = %d", years);      printf("\n Weeks  = %d", weeks);      printf("\n Days   = %d", days);  *return* 0;  } |
| **Lab-5** | **A** | **Write following programs in C. (Decision Making: if, else)** |
|  |  | **1.** Print given feet into inches. (inches = feet\*12)  **Code:-**  *#include*<stdio.h>  int main()  {      float Feet;      printf("Enter The Value of Feet=");      scanf("%f",&Feet);      printf("Inches =%f",Feet\*12);  *return* 0;  }  **2.** Swap two numbers. (Using temporary variable and without using temporary variable)  **Code:-**  **i)**Using temporary variable  *#include*<stdio.h>  int main() {    int first, second, temp;      printf("Enter first number: ");      scanf("%d", &first);      printf("Enter second number: ");      scanf("%d", &second);        temp = first;        first = second;        second = temp;      printf("\nAfter swapping, first number = %d\n", first);      printf("After swapping, second number = %d\n", second);  *return* 0;  }  **ii)**Without using temporary variable  *#include*<stdio.h>   int main()  {  int a,b;  printf("Enter first number: ");    scanf("%d", &a);    printf("Enter second number: ");    scanf("%d", &b);  a=a+b;  b=a-b;  a=a-b;  printf("\nAfter swap a=%d b=%d",a,b);  *return* 0;  }  **3.** Check whether given number is positive or negative.  **Code:-**  *#include* <stdio.h>  int main()  {    int n;    printf("Enter any number:\n");    scanf("%d",&n);  *if* (n >= 0)    {  *if* (n > 0)        printf("%d is Positive", n);  *else*        printf("You have entered Value zero.");    }  *else*      printf("%d is Negative", n);  *return* 0;  }  **4.** Check whether the given number is odd or even.  **Code:-**  *#include*<stdio.h>    int main()  {     int n;     printf("Enter an integer =");     scanf("%d",&n);    *if* (n&1==1){        printf("Odd\n");    }  *else*{        printf("Even\n");     }  *return* 0;  }  **5.** Find out largest number from given three numbers  **Code:-**  *#include* <stdio.h>    int main()  {      int A, B, C;      printf("Enter the numbers A, B and C: ");      scanf("%d %d %d", &A, &B, &C);  *if* (A >= B && A >= C)          printf("%d is the largest number.", A);  *if* (B >= A && B >= C)          printf("%d is the largest number.", B);  *if* (C >= A && C >= B)          printf("%d is the largest number.", C);  *return* 0;  }  **6.** Check whether given character is vowel or consonant. (Using single if only)  **Code:-**  # *#include* <stdio.h>  int main()  {      char ch;      printf("Please Enter an alphabet: ");      scanf(" %c", &ch);  *if*(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||          ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')  {          printf("\n %c is a Vowel.", ch);      }  *else* {          printf("\n %c is a Consonant.", ch);      }  *return* 0;  } |
| **Lab-5** | **B** | **Write following programs in C**. **(Decision Making: if, else)** |
|  |  | **1.** Print “Hello World” without using ‘;’ symbol.  **Code:-**  *#include*<stdio.h>  int main()  {  *if*(printf("hello world")){      }  }  **2.** Check whether the given number is odd or even using bitwise operator.  **Code:-**  *#include* <stdio.h>  int main()  {      int num;      printf("Enter any number: ");      scanf("%d", &num);  *if*(num & 1)      {          printf("%d is odd.", num);      }  *else*      {          printf("%d is even.", num);      }  *return* 0;  }  **3.** Multiply and divide a number by 2 without using multiplication/division operator.  **Code:-**  *#include*<stdio.h>  int main()  {      int a,b,c;      printf("Enter The Number a=");      scanf("%d",&a);      b=a>>1;      c=a<<1;      printf("Multiply %d\n",c);      printf("divide %d",b);  *return* 0;  }  **4.** Shutdown Windows/Linux Shutdown Machine. [#include <stdlib.h> to be used for system() function]  **Code:-**  *#include*<stdio.h>  *#include*<stdlib.h>  int main()  {      system("C:\\WINDOWS\\System32\\shutdown -s");  *return* 0;  }  **5.** Display the current Date & Time. [#include <time.h> for time and ctime function and time\_t datatype.]  **Code:-**  *#include*<stdio.h>  *#include*<time.h>  int main()  {      time\_t t;      time(&t);      printf("\n this program has been writeen at{date and time}: %s",ctime(&t));  *return* 0;  } |
| **Lab-6** | **A** | **Write following programs in C. (Decision Making: Nested and Ladder if)** |
|  |  | **1.** Perform Addition, Subtraction, Multiplication and Division of 2 numbers as per user’s choice.  **Code:-**  *#include*<stdio.h>  int main()  {      int n1,n2,choice;      float Ans;        printf("Enter The Number n1 = ");      scanf("%d",&n1);      printf("Enter The Number n2 = ");      scanf("%d",&n2);      printf("Enter Your Choice\n 1-Addition\n 2-Substration\n 3-Multiplication\n 4-Division\n");      scanf("%d",&choice);    *if*(choice==1){          Ans= n1 + n2;          printf("%d+%d=%f",n1,n2,Ans);      }  *else* *if*(choice==2){          Ans= n1 - n2;          printf("%d-%d=%f",n1,n2,Ans);      }  *else* *if*(choice==3){          Ans= n1 \* n2;          printf("%d\*%d=%f",n1,n2,Ans);      }  *else* *if*(choice==4){          Ans= n1 / n2;          printf("%d / %d = %f",n1,n2,Ans);      }  *else*{          printf("Envalid choice");      }  *return* 0;  }  **2.** Enter basic salary of an employee and calculate Gross salary according to given conditions:  - Basic Salary >= 10000 : HRA = 20% of basic, DA = 80% of basic  - Basic Salary >= 20000 : HRA = 25% of basic, DA = 90% of basic  - Basic Salary >= 30000 : HRA = 30% of basic, DA = 95% of basic  **Code:-**  *#include*<stdio.h>  int main()  {      float basic,hra,da,gross;      printf("enter your basic salary");      scanf("%f",&basic);    *if*(basic>=10000 && basic<20000)      {          hra=(0.2)\*basic;          da=(0.8)\*basic;          gross=basic+hra+da;          printf("gross=%f",gross);      }  *else* *if*(basic>=20000 && basic<30000)      {          hra=(0.25)\*basic;          da=(0.9)\*basic;          gross=basic+hra+da;          printf("gross=%f",gross);      }  *else* *if*(basic>=30000)      {          hra=(0.3)\*basic;          da=(0.95)\*basic;          gross=basic+hra+da;          printf("gross=%f",gross);      }  *return* 0;  }  **3.** Check whether the entered character is upper case, lower case, digit or any special character.  **Code:-**  *#include*<stdio.h>  int main()  {      char c;           printf("Enter any character : ");           scanf("%c",&c);  *if*(c>='A' && c<='Z')               printf("character is  an upper case");  *else* *if*(c>='a' && c<='z')              printf("character is a lower case");  *else* *if*(c>='0'&& c<='9')             printf("it is not a character");  *else*            printf("character is a special character");    *return* 0;  }  **4.** Input an integer number and check the last digit of number is even or odd.  **Code:-**  *#include*<stdio.h>  void main()  {      int n;      printf(" Enter any number");      scanf("%d",&n);    *if*((n%10)%2==0)      {       printf("\n Last Digit of Number is Even");      }  *else*      {      printf("\n Last Digit of Number is Odd");      }    }  **5.** Read marks of five subjects. Calculate percentage and print class accordingly. Fail below 35, Pass Class between 36 to 45, Second Class between 46 to 60, First Class between 61 to 70, Distinction if more than 70.  **Code:-**  *#include* <stdio.h>  int main(void){  int num;  printf("Enter your mark ");  scanf("%d",&num);  printf(" You entered %d", num);  *if*(num > 70){      printf(" You are pass with distinction");          }  *else* *if* ( num>61||num<=70){          printf(" You are pass with First Class");          }  *else* *if* ( num>46||num<=60){          printf(" You are pass with Second Class");          }  *else* *if* ( num>36||num<=45){          printf(" You are Pass With Pass Class");      }  *else* *if* ( num < 35){          printf(" You Failed in this exam");          }  *return* 0;  } |
| **Lab-6** | **B** | **Write following programs in C. (Decision Making: Nested and Ladder if)** |
|  |  | **1.** Input electricity unit charge and calculate the total electricity bill according to the given condition:  - For first 50 units Rs. 0.50/unit  - For next 100 units Rs. 0.75/unit  - For next 100 units Rs. 1.20/unit  - For unit above 250 Rs. 1.50/unit  - An additional surcharge of 20% is added to the bill.  **Code:-**  *#include*<stdio.h>  int main()  {      float unit,total=0,temp=0;      printf("Enter unit:");      scanf("%f" , &unit);  *if*(unit<=50)      {      total=unit\*0.50;      }  *else* *if*(unit<=150)      {      total=50\*0.50+(unit-50)\*0.75;      }  *else* *if*(unit<=250)      {      total=50\*0.50+100\*0.75+(unit-150)\*1.20;      }  *else*      {      total=50\*0.50+100\*0.75+100\*1.20+(unit-250)\*1.50;      }      temp=total\*0.20;      total=total+temp;      printf("%f", total);    *return* 0;  }  **2.** Determine the roots of the equation ax2+bx+c=0.  **Code:-**  *#include*<stdio.h>  *#include*<math.h>  int main()  {      int a,b,c,d,x,y;      printf("enter the valus of a:");      scanf("%d",&a);      printf("enter the value of b:");      scanf("%d",&b);      printf("enter the value of c:");      scanf("%d",&c);      d=sqrt (b\*b-4\*a\*c);      printf("discriminant value is : %d",d);    }  **3.** Three sides of a triangle are entered through the keyboard, WAP to check whether the triangle is isosceles, equilateral, scalene or right angled triangle.  **Code:-**  *#include*<stdio.h>  *#include*<math.h>  int main()  {      int x, y, z;      int max, flag=0;      printf("Enter the first side: ");      scanf("%d", &x);      printf("Enter the second side: ");      scanf("%d", &y);      printf("Enter the third side: ");      scanf("%d", &z);  *if* (x==y && x==z)      {          printf("Triangle is equilateral.");      }  *else* *if* (x==y || y==z || z==x)      {          printf("Triangle is isosceles.");      }      max = x;  *if* (y>max)          max = y;  *if* (z>max)          max = z;  *if* (max == x)      {  *if*(pow(max,2) == pow(y,2)+pow(z,2))              flag=1;      }  *if* (max == y)      {  *if*(pow(max,2) == pow(x,2)+pow(z,2))              flag=1;      }  *if* (max == z)      {  *if*(pow(max,2) == pow(x,2)+pow(y,2))              flag=1;      }  *if*(flag==1)      {          printf("Triangle is right angled");      }  }  **4.** Find the second largest number among three user input numbers  **Code:-**  **5.** In digital world colors are specified in RGB format, with values of R, G, and B varying on integer scale from  0 to 255. Colors are mentioned in Cyan-Magenta-Yellow-Black (CMYK) format with values of C, M, Y and K  varying on a real scale from 0.0 to 1.0. Convert RGB color to CMYK as per formula:  - White=Max(red/255,green/255,blue/255)  - Cyan=(white - red/255)/white  - Magenta=(white - green/255)/white  - Yellow=(white - blue/255)/white  - Black=1 - white  **Note:** if RGB values are all 0, then the CMY values are all 0 and the K value is 1.  **Code:-** |
| **Lab-7** | **A** | **Write following programs in C. (Decision Making: Switch…Case, Conditional Operator)** |
|  |  | **1.** Print day name of week using switch.  **Code:-**  *#include*<stdio.h>  int main()  {      int a;      printf("Enter Number 1 to print Monday 2 to Tuesday 3 to Wednesday......");  scanf("%d",&a);  *switch*(a){  *case* 1:{              printf("Monday");  *break*;          }  *case* 2:{              printf("Tuesday");  *break*;          }  *case* 3:{              printf("Wednesday");  *break*;          }  *case* 4:{              printf("Thursday");  *break*;          }  *case* 5:{              printf("Friday");  *break*;          }  *case* 6:{              printf("Saturday");  *break*;          }  *case* 7:{              printf("Sunday");  *break*;          }  *default*:        {              printf("enter the no. between 1 to 7");  *break*;          }  *return* 0;      }    }  **2.** Print number of days in a month using switch.  **Code:-**  *#include*<stdio.h>  int main()  {      int month;      printf("enter the no. (1 for jan 2 fo feb 3 march ......)");      scanf("%d",&month);  *switch*(month){  *case* 1:  *case* 3:  *case* 5:  *case* 7:  *case* 8:  *case* 10:  *case* 12:{              printf("31 days ");  *break*;          }  *case* 4:  *case* 6:  *case* 9:  *case* 11:{              printf("30 days");  *break*;          }  *case* 2:{              printf("29/28 days");  *break*;          }  *default*:{              printf("Enter the ni, between 1 to 12");  *break*;          }  *return* 0;      }  }  **3.** Perform Addition, Subtraction, Multiplication and Division of 2 numbers as per user’s choice using switch.  **Code:-**  *#include*<stdio.h>  int main()  {      int operators,n1,n2,sum;      printf("Enter The number n1= ");      scanf("%d",&n1);      printf("Enter The Number n2= ");      scanf("%d",&n2);      printf("Enter 1 For Addtion, 2 for Subtract, 3 to Multiply, 4 to divide ");      scanf("%d",&operators);  *switch*(operators){  *case* 1:{              printf("sum= %d + %d ",n1 + n2);  *break*;          }  *case* 2:{              printf("sum= %d - %d ",n1 - n2);  *break*;          }  *case* 3:{              printf("sum= %d \* %d ",n1 \* n2);  *break*;          }  *case* 4:{              printf("sum= %d / %d ",n1 / n2);  *break*;          }  *default*:{              printf("enter the no. between 1 to 4");  *break*;          }      }  *return* 0;  }  **4.** Find out largest number from given 3 numbers using conditional operator.  **Code:-**  *#include*<stdio.h>  int main()  {      int a,b,c,largest;      printf("Enter The value of a , b and c");      scanf("%d %d %d", &a, &b, &c);      largest=a > b ? (a > c ? a : c) : (b > c ? b : c);      printf("the largest number is %d",largest);  *return* 0;  }  **5.** Check whether number is even number or odd number using conditional operator.  **Code:-**  *#include*<stdio.h>  int main()  {      int A,number;      printf("enter the number=");      scanf("%d",&A);      number=A%2 == 0 ? printf("Even number\n") : printf("Odd number\n");  *return* 0;  } |
| **Lab-7** | **B** | **Write following programs in C. (Decision Making: Switch…Case, Conditional Operator)** |
|  |  | **1.** Read 3 numbers, multiply largest number from first two numbers to third one using switch.  **Code:-**  *#include*<stdio.h>  int main()  {      int n1,n2,n3;      printf("enter the value of n1,n2 and n3 ");      scanf("%d%d%d",&n1,&n2,&n3);  *switch*(n1>n2){  *case* 1:printf("%d",n1\*n3);  *break*;  *case* 0:printf("%d",n1\*n3);  *break*;        }  *return* 0;  }  **2.** Check whether character is an alphabet or not using conditional operator.  **Code:-**  *#include* <stdio.h>  int main()  {      char ch;      printf("Enter any character: ");      scanf("%c", &ch);      (ch>='a' && ch<='z') || (ch>='A' && ch<='Z')          ? printf("It is Alphabet")          : printf("It is Not Aiphabet");  *return* 0;  }  **3.** Get a number as a string from user and convert string to integer, string to float as per user’s choice.  **Code:-**  *#include*<stdio.h>  *#include*<stdlib.h>  int main()  {      char s[100] ="4.0800" ;      printf("enter a string:");      scanf("%s",s);      int x = atoi(s);      printf("converting strint to integer: %d\n",x);          float y = atof(s);      printf("converting strint to integer: %f\n",y);  *return* 0;  }  **4.** Check for equality of two numbers without using arithmetic or comparison operator.  **Code:-**  *#include*<stdio.h>  int main(){      int x,y;      printf("enter two numbers");      scanf("%d%d",&x,&y);  *if*(x^y){          printf("both no.s are not  equal");        }  *else*{          printf("both no.s are equal");      }  *return* 0;  }  **5.** Print number of days in a month considering leap year using switch.  **Code:-**  *#include*<stdio.h>  int main()  {      int year,month;      printf("Enter 1 for jan 2 for feb 3 for march..... : ");      scanf("%d",&month);  *switch*(month)      {  *case* 1:  *case* 3:  *case* 5:  *case* 7:  *case* 8:  *case* 10:  *case* 12:                  printf("31 Days ");  *break*;  *case* 4:  *case* 6:  *case* 9:  *case* 11:                  printf("30 days");  *break*;  *case* 2:                  printf("Enter The number of the year : ");                  scanf("%d",&year);  *if*(year%400==0||year%4==0&&year%100!=0)                  {                      printf("29 days");                  }  *else*                  {                      printf("28 days");                  }  *break*;      }  *return* 0;  } |
| **Lab-8** | **A** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Print 1 to 10 then modify program Print 1 to n using while and do while loop.  **Code:-**  **i)** Printing 1 to 10 using while loop  *#include*<stdio.h>  int main()  {      int i=1;    *while*(i<=10)      {          printf("%d\n",i);          i++;      }  *return* 0;  }  **ii)** Printing 1 to n using while loop  *#include*<stdio.h>  int main()  {      int i=1,n;      printf("Enter upto how many number to print = ");      scanf("%d",&n);  *while*(i<=n)      {          printf("%d\n",i);          i++;      }  *return* 0;  }  **iii)** Printing 1 to 10 using do while loop  *#include*<stdio.h>  int main ()  {      int i=1;  *do*{          printf("%d\n",i);          i=i+1;      }  *while*(i<=10);  *return* 0;  }  **iv)** Printing 1 to n using do while loop  *#include*<stdio.h>  int main()  {      int i=1,n;      printf("Enter upto how many number to print = ");      scanf("%d",&n);  *do*{          printf("%d\n",i);          i++;      }  *while*(i<=n);  *return* 0;  }  **2.** Print odd numbers between 1 to 10 then modify 1 to n using while and do while loop  **Code:-**  **i)** Printing odd number between 1 to 10 using while loop  *#include*<stdio.h>  int main()  {      int i=1;    *while*(i<=10)      {  *if*(i%2==1){          printf("%d\n",i);      }          i++;      }  *return* 0;  }  **ii)** Printing odd number between 1 to n using while loop  *#include*<stdio.h>  int main()  {      int i=0,n;      printf("Enter upto how many number to print = ");      scanf("%d",&n);  *while*(i<=n)      {  *if* (i%2==1)          {              printf("odd numbers are:%d\n",i);          }          i++;      }  *return* 0;  }  **iii)** Printing odd number between 1 to 10 using do while loop  *#include*<stdio.h>  int main ()  {      int i=1;  *do*{  *if*(i%2==1){          printf("%d\n",i);      }          i=i+1;      }  *while*(i<=10);  *return* 0;  }  **iv)** Printing odd number between 1 to n using do while loop  *#include*<stdio.h>  int main()  {      int i=0,n;      printf("Enter upto how many number to print = ");      scanf("%d",&n);  *do*{  *if* (i%2==1)          {              printf("odd numbers are:%d\n",i);          }          i++;      }  *while*(i<=n);  *return* 0;  }  **3.** Print numbers between two given numbers which is divisible by 2.  **Code:-**  *#include*<stdio.h>  int main()  {      int i,n;      printf("From");      scanf("%d",&i);      printf("To");      scanf("%d",&n);  *while*(i<=n)      {  *if* (i%2==0)          {              printf("The number which are divisible by 2 are:%d\n",i);          }            i++;      }  *return* 0;  }  **4.** Print sum of 1 to n numbers.  **Code:-**  *#include* <stdio.h>  int main()  {      int num, i, sum = 0;      printf(" Enter a positive number: ");      scanf("%d", &num);  *while* (i <= num)      {          sum = sum + i;          i++;      }      printf("\n Sum of the first %d number is: %d", num, sum);  *return* 0;  }  **5.** Get 10 numbers from user print count of odd, even numbers.  **Code:-**  *#include*<stdio.h>  int main()  {    int i=1,n1,n2,n3,n4,n5,n6,n7,n8,n9,n10,even=0,odd=0;     printf("\nEnter the First Number :");     scanf("%d",&n);     printf("\nEnter the Second Number :");     scanf("%d",&n);      printf("\nEnter the Third Number :");     scanf("%d",&n);      printf("\nEnter the Fourth Number :");     scanf("%d",&n);      printf("\nEnter the Fifth Number :");     scanf("%d",&n);      printf("\nEnter the Sixth Number :");     scanf("%d",&n);      printf("\nEnter the Seventh Number :");     scanf("%d",&n);      printf("\nEnter the Eight Number :");     scanf("%d",&n);      printf("\nEnter the Ninth Number :");     scanf("%d",&n);      printf("\nEnter the Tenth Number :");     scanf("%d",&n);     printf("\nEven numbers:");  *while*(i<=n){  *if*(i%2==0){          printf("\n%d",i);          even++;        }        i++;     }     printf("\nOdd numbers:");     i=1;  *while*(i<=n)     {  *if*(i%2==1)       {          printf("\n%d",i);          odd++;       }       i++;     }     printf("\nTotal even numbers:%d",even);     printf("\nTOtal odd numbers:%d",odd);  *return* 0;  } |
| **Lab-8** | **B** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Print number and its square root for 0 to 9.  **Code:-**  *#include*<stdio.h>  int main(){      double result,i=1;  *while*(i<=9){          result=sqrt(i);          printf(" square root of %lf is : %lf\n",i,result);          i++;      }  *return* 0;  }  **2.** Print all integer greater then 100 and less than 200 that are divisible by 7 but not divisible by 5.  **Code:-**  *#include*<stdio.h>  int main(){      int i=100;  *while*(i<200){  *if*(i%7==0 && i%5!=0)      printf("%d\n",i);      i++;  }    *return* 0;  }  **3.** Print first 50 numbers in series 1, 4, 7, 10…  **Code:-**  *#include*<stdio.h>  int main(){      int i=1;  *while*(i<=50){          printf("%d\n",i);          i=i+3;      }  *return* 0;  }  **4.** Calculate the square of integers 1 through 10.  **Code:-**  *#include*<stdio.h>  int main(){      int i=1,sq;  *while* (i<=10){      sq=i\*i;      printf("square of %d is : %d\n",i,sq);      i++;      }  *return* 0;  }  **5.** Print sum of series 1 + 4 + 9 + 16 + 25 + 36 + …n.  **Code:-**  *#include*<stdio.h>  int main(){      int n,sum=0,i=1;      printf("Enter n: ");      scanf("%d",&n);  *for*(i=1;i<=n;i=i+3){          sum=sum+i;      }      printf("sum is:%d",sum);  *return* 0;  } |
| **Lab-9** | **A** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Print sum of series 1 – 2 + 3 – 4 + 5 – 6 + 7 … n.  **Code:-**  *#include*<stdio.h>  int main()  {      int n,sum=0,i=1;      printf("Enter the value of n\n");      scanf("%d",&n);  *while*(i<=n)      {  *if*(i%2!=0)          {              sum=sum+i;          }  *else*          {              sum=sum-i;          }          i++;      }      printf("sum=%d",sum);  *return* 0;  }  **2.** Print multiplication table of a given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int n,i=1;      printf(" Enter the Number : ");      scanf("%d",&n);  *while*(i<=10){          printf("%d\*%d=%d\n",n,i,n\*i);          i++;      }  *return* 0;  }  **3.** Calculate 𝑥𝑦 without using power function.  **Code:-**  *#include*<stdio.h>  void main()  {   int x,y,i=1,r=1,t;   printf("Enter a number:");   scanf("%d",&x);   printf("Enter the power:");   scanf("%d",&y);  *while*(i<=y)   {    t=x;    r=r\*t;    i++;   }   printf("Result:%d",r);  }  **4.** Find factorial of the given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int i=1,n,fact=1;      printf("Enter The Value of n : ");      scanf("%d",&n);  *while*(i<=n){          fact=fact\*i;          i++;      }      printf("%d",fact);  *return* 0;  }  **5.** Find factors of the given number.  **Code:-**  *#include*<stdio.h>  int main(){      int i=1,n;      printf("Enter the Value Of n : ");      scanf("%d",&n);  *while*(i<=n){  *if*(n%i==0){              printf("\n%d",i);          }          i++;      }  *return* 0;  } |
| **Lab-9** | **B** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Print all uppercase and lowercase alphabets.  **Code:-**  *#include*<stdio.h>  int main()  {      char ch='A',cha='a';    *while*(ch<='Z'){          printf(" %c",ch );          ch++;      }    printf("\n");  *while*(cha<='z'){          printf(" %c",cha );          cha++;      }  *return* 0;  }  **2.** Get a decimal number from user and convert it into roman digits. (Symbol: I:1, IV:4, V:5, IX:9, X:10, XL:40, L:50, XC:90, C:100, CD:400, D:500, CM:900, M:1000)  **Code:-**  **3.** Convert given number in words. (i.e. n=3456 🡪output: Three Four Five Six)  *#include*<stdio.h>  int main(){      int no,digit,temp=0;        printf("Enter Number: ");      scanf("%d",&no);  *while*(no>0){          digit=no%10;          temp=temp\*10+digit;          no=no/10;      }       no=temp;    *while*(no>0){      digit=no%10;      no=no/10;  *switch*(digit){    *case* 0:      printf(" Zero ");  *break*;    *case* 1:      printf(" One ");  *break*;  *case* 2:      printf(" Two ");  *break*;  *case* 3:      printf(" Three ");  *break*;  *case* 4:      printf(" Four ");  *break*;    *case* 5:      printf(" Five ");  *break*;    *case* 6:      printf(" Six ");  *break*;  *case* 7:      printf(" Seven ");  *break*;  *case* 8:      printf(" Eight ");  *break*;  *case* 9:      printf(" Nine ");  *break*;     }  }  *return* 0;  }  **4.** Convert decimal number to binary. (i.e. n=11 🡪output: 1101)  **Code:-**  *#include* <stdio.h>    int main()  {      int num,bin=0,rem=0,place=1;        printf("Enter a decimal number:");      scanf("%d",&num);        printf("\nBinary equivalent of %d is ",num);  *while*(num)      {          rem   = num % 2;          num   = num / 2;          bin   = bin + (rem \* place);          place = place \* 10;      }      printf("%d\n", bin);    *return* 0;  } |
| **Lab-10** | **A** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Find out sum of first and last digit of a given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int ld,sum,n,fd;      printf("Enter The value n : ");      scanf("%d",&n);      ld=n%10;  *while*(n>=10){          n=n/10;      }      fd=n;      sum=fd+ld;      printf("The Sum of first digit and last digit is %d",sum);  *return* 0;  }  **2.** Find the sum and average of different numbers which are accepted by user as many as user wants.  **Code:-**  *#include* <stdio.h>  int main()  {    int no,sum=0,i=0,val;    printf("\n How Many Number You Want to Enter : ");    scanf("%d",&no);  *while*(i<no)          {            printf("Enter No [%d]:",i+1);            scanf("%d",&val);            sum=sum+val;            i++;          }      printf("\n Sum = %d",sum);      printf("\n Avg = %.2f",((float)sum)/no);  *return* 0;  }  **3.** Find whether the given number is prime or not.  **Code:-**  *#include*<stdio.h>  int main(){      int n,i,count=0;      printf("enter the Value Of n : ");      scanf("%d",&n);      i=2;  *while*(i<=n/2)      {  *if*(n%i==0)          {              count=1;  *break*;          }          i++;      }  *if*(count==0){          printf("%d is a prime number",n);      }  *else*{          printf("%d is not prime number",n);      }  *return* 0;  }  **4.** Print digits of given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int rem=0,n;      printf("Enter The value n : ");      scanf("%d",&n);  *while*(n>0){          rem=n%10;          printf("\n%d",rem);          n=n/10;        }    *return* 0;  }  **5.** Print given number in reverse order.  **Code:-**  *#include*<stdio.h>  int main(){      int n,rem=0,digit=0;      printf("enter the value of n : ");      scanf("%d",&n);  *while*(n>0)      {      rem=n%10;      n/=10;      digit=digit\*10+rem;      }      printf("digit is :%d",digit);    } |
| **Lab-10** | **B** | **Write following programs in C. (While Loop)** |
|  |  | **1.** Check whether the given number is perfect or not.  **Code:-**  *#include*<stdio.h>  int main()  {      int n, i=1, sum=0;      printf("\n Enter a number: ");      scanf("%d", &n);  *while*(i<n)      {  *if*(n%i==0)          {              sum=sum+i;          }          i++;      }  *if*(sum==n)          printf("\n %d is a Perfect Number.",n);  *else*          printf("\n %d is Not a Perfect Number.",n);  }  **2.** Find whether the given number is prime or not using flag.  **Code:-**  *#include* <stdio.h>  void main()  {      int n, i, flag = 0;      printf("Enter value of n: ");      scanf("%d", &n);  *if* (n == 1)          exit(0);  *for* (i = 2; i < n; i++)      {  *if* (n % i == 0)          {              flag++;  *break*;          }      }  *if* (flag == 0)      printf("%d is a prime number\n", n);  *else*      printf("%d is not a prime number\n", n);  }  **3.** Check whether the given number is palindrome or not.  **Code:-**  *#include*<stdio.h>  int main()  {      int num, ans = 0,temp;      printf("Enter The Number : ");      scanf("%d",&num);      temp = num;  *while*(num > 0)      {          int mod = num % 10;          ans = ans \* 10 + mod;          num = num / 10;      }  *if*(ans == temp)             printf("Entered Number Is Palindrome\n");  *else*             printf("Entered Number Is Non-Palindrome\n");    *return* 0;  }  **4.** Check whether the given number is Armstrong or not.  **Code:-**  *#include*<stdio.h>   int main()  {  int n,r,sum=0,temp;  printf("enter the number=");  scanf("%d",&n);  temp=n;  *while*(n>0)  {  r=n%10;  sum=sum+(r\*r\*r);  n=n/10;  }  *if*(temp==sum)  printf("Armstrong  number ");  *else*  printf("not Armstrong number");  *return* 0;  }  **5.**  Find HCF and LCM of two numbers.  **Code:-**  *#include* <stdio.h>  int main() {      int a, b, x, y, t, gcd, lcm;      printf("Enter two integers\n");      scanf("%d%d", &x, &y);      a = x;      b = y;  *while* (b != 0)      {          t = b;          b = a % b;          a = t;      }      gcd = a;      lcm = (x\*y)/gcd;      printf("HCF of %d and %d = %d\n", x, y, gcd);      printf("LCM of %d and %d = %d\n", x, y, lcm);  *return* 0;  } |
| **Lab-11** | **A** | **Write following programs in C. (For Loop)** |
|  |  | **1.** Print 1 to 10 then modify program print 1 to n.  **Code:-**  **i)** Printing 1 to n with for loop  *#include*<stdio.h>  int main()  {      int i=1,n;      printf("Enter upto how many number to print = ");      scanf("%d",&n);  *for*(i=1;i<=n;i++)      {          printf("%d\n",i);      }  *return* 0;  }  **ii)** Printing 1 to 10 with for loop  *#include*<stdio.h>  int main()  {      int i=1;    *for*(i=1;i<=10;i++)      {          printf("%d\n",i);      }  *return* 0;  }  **2.** Print sum of 1 to n numbers.  **Code:-**  *#include* <stdio.h>  int main()  {      int num, i, sum = 0;      printf(" Enter a positive number: ");      scanf("%d", &num);  *for*(i=1;i<=num;i++)      {          sum = sum + i;      }      printf("\n Sum of the first %d number is: %d", num, sum);  *return* 0;  }  **3.** Print multiplication table of a given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int n,i=1;      printf(" Enter the Number : ");      scanf("%d",&n);  *for*(i=1;i<=10;i++){          printf("%d\*%d=%d\n",n,i,n\*i);      }  *return* 0;  }  **4.** Calculate 𝑥𝑦 without using power function.  **Code:-**  *#include*<stdio.h>  void main()  {   int x,y,i=1,r=1,t;   printf("Enter a number:");   scanf("%d",&x);   printf("Enter the power:");   scanf("%d",&y);  *for*(i=1;i<=y;i++)   {    t=x;    r=r\*t;   }   printf("Result:%d",r);  }  **5.** Find factorial of the given number.  **Code:-**  *#include*<stdio.h>  int main()  {      int i=1,n,fact=1;      printf("Enter the Value of n : ");      scanf("%d",&n);  *for* ( i=1;i<=n;i++)      {          fact=fact\*i;      }      printf("%d",fact);  *return* 0;    } |
| **Lab 11** | **B** | **Write following programs in C. (For Loop)** |
|  |  | **1.** Print the Fibonacci Series.  **Code:-**  *#include*<stdio.h>  int main()  {   int n1=0,n2=1,n3,i,number;   printf("Enter the number of elements:");   scanf("%d",&number);   printf("\n%d %d",n1,n2);  *for*(i=2;i<number;++i)   {    n3=n1+n2;    printf(" %d",n3);    n1=n2;    n2=n3;   }  *return* 0;   }  **2.** Count frequency of digits in an integer.  **Code:-**  *#include* <stdio.h>  *#define* BASE 10  int main() {    long long num, n;    int i, lastDigit;    int freq[BASE];    printf("Enter a number: ");    scanf("%lld", &num);  *for* (i = 0; i < BASE; i++) {      freq[i] = 0;    }    n = num;  *while* (n != 0) {      lastDigit = n % 10;      n /= 10;      freq[lastDigit]++;    }    printf("Frequency of each digit in %lld is: \n", num);  *for* (i = 0; i < BASE; i++) {      printf("Frequency of %d = %d\n", i, freq[i]);    }  *return* 0;  }  **3.** Print all ASCII character with their values.  **Code:-**  *#include* <stdio.h>  int main()  {      int i;  *for*(i=0; i<=255; i++)      {          printf("ASCII value of character %c = %d\n", i, i);      }  *return* 0;  }  **4.** Swap first and last digits of a number.  **Code:-**  *#include* <math.h>  *#include* <stdio.h>  int main() {      int Num, FD, Count, LD, x, y, Swapping;    printf("\n Enter the number : ");    scanf("%d", &Num);    Count = log10(Num);    FD = Num / pow(10, Count);    LD = Num % 10;    x = FD \* (pow(10, Count));    y = Num % x;    Num = y / 10;    Swapping = LD \* (pow(10, Count)) + (Num \* 10 + FD);    printf(" \n The Number after Swapping the First Digit and Last Digit =  %d",           Swapping);  *return* 0;  } |
| **Lab 12** | **A** | **Write the following program in C. (Nested For Loop)** |
|  |  | **1.** Print following patterns  **Patterns:**  **(a)**  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\*  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 1; i <= 5; i++)      {  *for* ( j = 1; j <= i; j++)          {              printf("\*");          }          printf("\n");      }  *return* 0;  }  **(b)**  1  12  123  1234  12345  **Code:-**  *#include*<stdio.h>  int main(){      int i,j;  *for* ( i = 1; i <= 5; i++)      {  *for* ( j = 1; j <= i; j++)          {              printf("%d",j);          }          printf("\n");      }  *return* 0;  }  **(c)**  5  54  543  5432  54321  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 5; i >= 1; i--)      {  *for* ( j = 5; j >=i; j--)          {              printf("%d",j);          }          printf("\n");      }  *return* 0;  }  **(d)**  1  22  333  4444  55555  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 1; i <= 5; i++)      {  *for* ( j = 1; j <= i; j++)          {              printf("%d",i);          }          printf("\n");      }  *return* 0;  } |
| **Lab 12** | **B** | **Write the following programs in C. (Nested For Loop)**  **1.** Find the sum of 1 + (1+2) + (1+2+3) + (1+2+3+4) + …+ (1+2+3+4+…. +n).  **Code:-**  **2.** Estimate the value of the mathematical constant e. (Formula: 𝑒 = 1 +  **Code:-**  **3.** Print Pascal triangle.  **Code:-** |
| **Lab 13** | **A** | **Write following program in C. (Nested For Loop)** |
|  |  | **1.** Print following programs.  **Patterns:**  **(a)**  \*\*\*\*\*  \*\*\*\*  \*\*\*  \*\*  \*  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 5; i >= 1; i--)      {  *for* ( j = 1; j <= i; j++)          {              printf("\*");          }          printf("\n");      }  *return* 0;  }  **(b)**  12345  1234  123  12  1  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 5; i >= 1; i--)      {  *for* ( j = 1; j <= i; j++)          {              printf("%d",j);          }          printf("\n");      }  *return* 0;  }  **(c)**  \*  \* \*  \* \* \*  \* \* \* \*  \* \* \* \* \*  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 1; i <= 5; i++)      {  *for* ( j = 5; j >= i; j--)      {          printf(" ");      }  *for* ( j = 1; j <= i; j++)      {          printf(" \*",j);      }      printf("\n");      }  *return* 0;      }  **(d)**  1  1 2  1 2 3  1 2 3 4  1 2 3 4 5  **Code:-**  *#include*<stdio.h>  int main()  {      int i,j;  *for* ( i = 1; i <= 5; i++)      {  *for* ( j = 5; j >= i; j--)      {          printf(" ");      }  *for* ( j = 1; j <= i; j++)      {          printf(" %d",j);      }      printf("\n");      }  *return* 0;  } |
| **Lab 13** | **B** | **Write following program in C. (Nested For Loop)** |
|  |  | **1.** Print following patterns.  **Patterns**  **(a)**  1  2 3  4 5 6  7 8 9 10  11 12 13 14 15  **Code:-**  *#include*<stdio.h>    int main(){      int i,j,k,n=5,num=0;    *for*(i=1;i<=n;i++){    *for*(j=1;j<=i;j++){              num=num+1;              printf("%d ",num);            }            printf("\n");        }  *return* 0;    }  **(b)**  1  0 1  0 1 0  1 0 1 0  1 0 1 0 1  **Code:-**  *#include*<stdio.h>    int main(){      int i,j,k,n=5,num=1;    *for*(i=1;i<=n;i++){    *for*(j=1;j<=i;j++){  *if*(num%2==0){                  printf("0");                }  *else*{                  printf("1");                }               num++;            }            printf("\n");        }  *return* 0;    }  **(c)**  \* \* \* \* \*  \* \* \* \*  \* \* \*  \* \*  \*  **Code:-**  *#include*<stdio.h>    int main(){      int i,j,k,n=5;    *for*(i=n;i>=1;i--){  *for*(j=1;j<=(n-i);j++){              printf(" ");            }  *for*(k=i;k>=1;k--){              printf("\* ");            }            printf("\n");        }  *return* 0;    }  **(d)**  1  A B  1 2 3  C D E F  1 2 3 4 5  **Code:-**  *#include*<stdio.h>    int main(){      int i,j,k,n=5,num=1;      char ch='A';    *for*(i=1;i<=n;i++){  *for*(j=1;j<=(n-i);j++){              printf(" ");            }  *for*(k=1;k<=i;k++){  *if*(i%2==1){              printf("%d ",num);              num++;               }  *else*{              printf("%c ",ch);              ch++;            }         }         printf("\n");        }  *return* 0;    }  **(e)**  \* \* \* \* \*  \* \*  \* \*  \* \*  \* \* \* \* \*  **Code:-**  *#include*<stdio.h>    int main(){      int i,j,k,n=5;    *for*(i=1;i<=n;i++){  *for*(j=1;j<=n;j++){  *if*(i==1||i==n||j==1||j==n){                  printf(" \* ");                }  *else*{                  printf("   ");                }            }              printf(" \n");        }  *return* 0;    } |
| **Lab 14** | **A** | **Write following programs in C. (Array)** |
|  |  | **1.** Read n numbers from user and print in normal and reverse order.  **Code:-**  *#include*<stdio.h>  void main()  {      int n,i,j;      printf("Enter an array size n: ");      scanf("%d",&n);      int a[n];  *for* (i=0;i< n;i++) {      printf("Enter the num: ");      scanf("%d", &a[i]);      }      printf("normal numbers : ");  *for*(i=0;i<n;i++){          printf("%d",a[i]);      }      printf("\nreverse num : ");  *for*(i=n-1;i>=0;i--){          printf("%d",a[i]);      }  }  **2.** Count number of positive or negative number from an array of n numbers.  **Code:-**  *#include*<stdio.h>    int main()  {   int Size, i, a[10];   int Positive\_Count = 0, Negative\_Count = 0;     printf("\n Please Enter the Size of an Array :  ");   scanf("%d", &Size);     printf("\nPlease Enter the Array Elements\n");  *for*(i = 0; i < Size; i++)   {        scanf("%d", &a[i]);   }    *for*(i = 0; i < Size; i ++)   {  *if*(a[i] >= 0)     {    Positive\_Count++;     }  *else*     {    Negative\_Count++;     }   }     printf("\n Total Number of Positive Numbers in this Array = %d ", Positive\_Count);   printf("\n Total Number of Negative Numbers in this Array = %d ", Negative\_Count);  *return* 0;  }  **3.** Count number of even or odd number from an array of n numbers.  **Code:-**  *#include*<stdio.h>  int main()  {      int arr[100], size, odd\_count = 0, even\_count = 0, i;      printf("Enter array size\n");      scanf("%d",&size);      printf("Enter array elements\n");  *for*(i = 0; i < size; i++)            scanf("%d",&arr[i]);  *for*(i = 0; i < size; i++)      {  *if*(arr[i] % 2 == 1)              odd\_count++;  *else*              even\_count++;      }      printf("Odd number count = %d\nEven number count = %d\n",odd\_count,even\_count);  *return* 0;  }  **4.** Find Max, Min, Sum, Avg. of given numbers from an array.  **Code:-**  *#include* <stdio.h>  int main()  {       int a[8],i,s=0,g,l;       float avg;       printf("Enter 8 Numbers:\n");  *for*(i=0;i<8;i++)       {            scanf("%d",&a[i]);            s=s+a[i];            avg=s/8.0;       }       printf("Sum of Array Elements = %d\n",s);       printf("Average of Elements   = %.2f\n",avg);       g=a[0];  *for*(i=0;i<8;i++)  *if*(a[i]>g)                 g=a[i];       printf("Greatest Element      = %d\n",g);       l=a[0];  *for*(i=0;i<8;i++)  *if*(a[i]<l)                 l=a[i];       printf("Lowest Element        = %d",l);  *return* 0;  }  **5.** Read five person height and weight and count the number of person having height greater than 170 and weight less than 50.  **Code:-**  *#include*<stdio.h>  int main(){      int n, person=0, i;      printf("\n\nEnter the number of the person : ");      scanf("%d",&n);        int height[n], weight[n];        printf("\nfor height :");  *for*(i = 0; i < n; i++){      printf("\nenter num %d :",i+1);      scanf("%d",&height[i]);      }        printf("\nfor weight :");  *for*(i = 0; i < n; i++){      printf("\nenter num %d :",i+1);      scanf("%d",&weight[i]);      }  *for*(i = 0; i < n; i++){  *if*(height[i]>170 && weight[i]<50){              person++;          }      }      printf("\nwperson having height greater than 170 and weight less than 50 are %d", person);  } |
| **Lab 14** | **B** | **Write following programs in C. (Array)** |
|  |  | **1.** Count numbers higher than the average of an array.  **Code:-**  **2.** Calculate the average, geometric and harmonic mean of n elements in array.  **Code:-**  *#include*<stdio.h>  *#include*<math.h>  int main() {      float avg=0, gm=0, hm=0, sum=0, prod=1, hmm=0;      int i, n;      printf("Enter the size of an array : ");      scanf("%d", &n);        int arr[n];  *for*(i = 0; i < n; i++){          printf("enter array value :");          scanf("%d",&arr[i]);          sum = sum + arr[i];          prod = prod \* arr[i];          hmm = hmm + (float)1 / arr[i];      }        int size = sizeof(arr) / sizeof(arr[0]);      avg = sum/(float)n;      gm = pow(prod, (float)1 / n);      hm = (float)size/sum;        printf("\naverage is %f", avg);      printf("\ngeometric mean is %f", gm);      printf("\nharmonic mean is %f", hm);  }  **3.** Sort elements of an array in an ascending order.  **Code:-**  *#include*<stdio.h>  int main() {      int n,j,k,i;      printf("enter size of a array : ");      scanf("%d",&n);        int arr[n];  *for*(j=0;j<n;j++){          printf("enter array :");          scanf("%d",&arr[j]);        }      int min=0,temp=0;      min= arr[0];    *for*( i=0;i<n;i++){  *for*( k=i;k<n;k++){  *if*(min>arr[k]){                  temp= arr[k];                  arr[k]=min;                  min=temp;              }          }          arr[i]=min;          min=arr[i+1];      }  *for*(i=0;i<n;i++){          printf("%d\n",arr[i]);        }    }  **4.** Count total duplicate element in an array  **Code:-**  *#include*<stdio.h>  int main() {      int i, n, j, count=0;      scanf("%d", &n);        int arr[n];  *for*(i = 0; i < n; i++){          printf("enter array value :");          scanf("%d",&arr[i]);      }    *for*(i = 0; i < n; i++){  *for*(j = i+1; j < n; j++){  *if*(arr[i] == arr[j]){                  count++;              }          }      }      printf("%d",count);  }  **5.** Find missing number of sequence using array. (in a sequence 1,2,4,5,7,8,10 Missing number are 3,6,9)  **Code:-**  *#include*<stdio.h>  int main() {      int i, n, j, count=0;      scanf("%d", &n);        int arr[n];  *for*(i = 0; i < n; i++){          printf("enter array value :");          scanf("%d",&arr[i]);      }    *for*(j = 0;j < n; j++){  *if*(arr[j]+1 != arr[j]){              printf("\n%d", arr[j]+1);          }      }  } |
| **Lab 15** | **A** | **Write following programs in C. (Array)** |
|  |  | **1.** Copy all elements of one array to another.  **Code:-**  *#include*<stdio.h>  int main(){      int n, i;      printf("Enter How Many element You want in array : ");      scanf("%d", &n);        int arr1[n], arr2[n];  *for*(i = 0; i < n; i++){      printf("enter 1st array values [%d] :",i+1);      scanf("%d",&arr1[i]);      }    *for*(i=0; i < n; i++){          arr2[i]=arr1[i];      }  *for*(i=0; i < n; i++){          printf("2nd array values are [%d] : %d\n",i+1, arr2[i]);      }  }  **2.** Count total number of negative elements in array.  **Code:-**  *#include*<stdio.h>  int main(){      int n, countpl=0, countmi=0, i;          printf("Enter How Many element You want in array : ");      scanf("%d",&n);        int num[n];  *for*(i = 0; i < n; i++){      printf("enter num %d :",i+1);      scanf("%d",&num[i]);      }    *for*(i = 0; i < n; i++){  *if*(num[i]>0){              countpl++;          }  *else*{              countmi++;          }      }      printf("total -ve are %d", countmi);  }  **3.** Count number of elements divisible by 3 in array.  **Code:-**  *#include*<stdio.h>  int main(){      int n, count=0, i;      printf("Enter How Many element You want in array : ");      scanf("%d",&n);        int num[n];  *for*(i = 0; i < n; i++){      printf("enter num %d :",i+1);      scanf("%d",&num[i]);      }    *for*(i = 0; i < n; i++){  *if*(num[i]%3==0){              count++;          }      }      printf("total are %d", count);  }  **4.** Search element in array.  **Code:-**  *#include*<stdio.h>  int main(){      int n, i, search;      printf("Enter How Many element You want in array : ");      scanf("%d", &n);        int arr[n];  *for*(i = 0; i < n; i++){      printf("enter num %d :",i+1);      scanf("%d",&arr[i]);      }        printf("enter the element you want to search :");      scanf("%d",&search);    *for*(i = 0; i < n; i++){  *if*(search == arr[i]){              printf("found at %d\n", i+1);  *break*;          }      }  }  **5.** Input a string in character array and print string and length of string.  **Code:-**  *#include*<stdio.h>  int main()  {      char inputstring[100];      int i,count=0;      printf("Enter The String \n ");       scanf("%s", inputstring);      printf("%s\n", inputstring);  *for* ( i = 0; inputstring[i]!='\0'; i++)      {          count++;      }      printf("Length of %s : %d",inputstring,count);  } |
| **Lab 15** | **B** | **Write following programs in C. (Array)** |
|  |  | **1.** Delete all duplicate elements from an array.  **Code:-** *//1. Delete all duplicate elements from an array.*  *#include*<stdio.h>  int main() {      int n, i, j, same=1;  printf("Enter The size of an array : ");      scanf("%d", &n);        int arr[n],nn=0;  *for*(i = 0; i < n; i++){          printf("enter %d : ", i+1);          scanf("%d",&arr[i]);      }    *for*(i = 0; i < n; i++){  *for*(j = i+1; j < n; j++){  *if*(arr[i] == arr[j]){                  same++;                  arr[j]=0;              }          }      }      nn= n - same-1;      int arr2[nn];  *for*(i = 0; i < n; i++){              arr2[i]=arr[i];              printf("array %d \n", arr2[i]);          }  }  **2.** Reverse elements of an array without using second array.  **Code:-**  *//Reverse elements of an array without using second array*  *#include* <stdio.h>  int main(){      int n,i=0;  printf("Enter The size of an array : ");      scanf("%d",&n);      int arr[n];  *for*(i = 0; i < n; i++){      printf("enter num %d :",i+1);      scanf("%d",&arr[i]);      }      int temp;  *for*(i = 0; i<n/2; i++){          temp = arr[i];          arr[i] = arr[n-i-1];          arr[n-i-1] = temp;      }  *for*(i = 0; i < n; i++){          printf("%d,", arr[i]);      }  }  **3.** Swap first elements with last, second to second last and so on.  **Code:-**  **4.** Find two largest elements in one dimensional array.  **Code:-**  *//Find two largest elements in a one dimensional array*  *#include*<stdio.h>  int main() {      int n, i, max1=0, max2=0;      printf("Enter The size of an array : ");      scanf("%d", &n);        int arr[n];  *for*(i = 0; i < n; i++){      printf("enter array %d :",i+1);      scanf("%d",&arr[i]);      }      max1 = arr[0];  *for* (i = 0; i < n; i++)      {  *if* (max1 < arr[i])          {              max1 = arr[i];          }      }      max2 = arr[0];  *for* (i = 0; i < n; i++)      {  *if* (arr[i] != max1)          {  *if* (max2 < arr[i])          {              max2 = arr[i];          }          }      }      printf("largest 2 num are %d and %d",max1, max2);  }  **5.** Insert new value in the sorted array.  **Code:-** |
| **Lab 16** | **A** | **Write following programs in C. (2D Array)** |
|  |  | **1.** Read values in two-dimensional array and print them in matrix form.  **Code:-**  *#include* <stdio.h>  *#define* N 10  *#define* M 10      void main()      {          int a[N][M];          int i, j, n, m;              printf("Enter row size of the matrix (max 10): ");              scanf("%d", &n);              printf("Enter column size of the matrix (max 10): ");              scanf("%d", &m);  *for* (i = 0; i < n; i++)              {  *for* (j = 0; j < m; j++)                  {                      printf("Enter a[%d][%d]: ", i, j);                      scanf("%d", &a[i][j]);                  }              }                  printf("\nMatrix of size %d x %d\n\n", n, m);  *for* (i = 0; i < n; i++)              {  *for* (j = 0; j < m; j++)                      {                          printf("  %d", a[i][j]);                      }                  printf("\n\n");              }      }  **2.** Count number of positive, negative and zero elements from 3 X 3 matrix.  **Code:-**  *#include* <stdio.h>      void main(){          int a[3][3];          int i, j,po=0,ne=0,zero=0;  *for* (i = 0; i <3; i++)              {  *for* (j = 0; j <3; j++)                  {                      printf("Enter a[%d][%d]: ", i, j);                      scanf("%d", &a[i][j]);  *if* (a[i][j] > 0)                          po++;  *else* *if* (a[i][j] < 0)                          ne++;  *else*                          zero++;                  }              }                  printf("\nMatrix of size 3 x 3\n\n");  *for* (i = 0; i < 3; i++)              {  *for* (j = 0; j < 3; j++)                      {                          printf("  %d", a[i][j]);                      }                  printf("\n\n");              }          printf("\nNumber of positive numbers = %d\nNumber of negative numbers = %d\nNumber of zeroes = %d\n", po, ne, zero);      }  **3.** Read and store the roll no and marks of 20 students using 2D array.  **Code:-**  *#include* <stdio.h>  void main()  {      int rno[20], marks[20];      int i, j;  *for* (i = 0; i < 20; i++)          {              printf("Enter roll of student[%d]: ", i + 1);              scanf("%d", &rno[i]);              printf("Enter marks of student[%d]: ", i + 1);              scanf("%d", &marks[i]);          }          printf("\n\nDetails of students is as follows\n");          printf("RNo\tMarks\n");  *for* (i = 0; i < 20; i++)      {          printf("%3d\t%3d", rno[i], marks[i]);          printf("\n");      }      printf("\n\n");  }  **4.** Perform Addition of two matrices.  **Code:-**  *#include*<stdio.h>  int main(){      int n , m,i=0,j=0;      printf("Enter the Size of first array : ");      scanf("%d",&n);      printf("Enter The Size of second array : ");      scanf("%d",&m);        int arr[n][m],arr2[n][m],summer[n][m];        printf("for arr 1\n");  *for*(i=0; i<n; i++){  *for*(j=0; j<m; j++){              printf("enter [%d,%d] :",i,j);              scanf("%d",&arr[i][j]);          }      }      printf("for arr 2\n");  *for*(i=0; i<n; i++){  *for*(j=0; j<m; j++){              printf("enter [%d,%d] :",i,j);              scanf("%d",&arr2[i][j]);          }      }  *for*(i=0; i<n; i++){  *for*(j=0; j<m; j++){              summer[i][j]=arr[i][j]+arr2[i][j];          }      }  *for*(i=0; i<n; i++){  *for*(j=0; j<m; j++){              printf("%d ",summer[i][j]);            }          printf("\n");      }      } |
| **Lab 16** | **B** | **Write following programs in C. (2D Array)** |
|  |  | **1.** Print Transpose of a matrix.  **Code:-**  **2.** Perform Multiplication of two matrices.  **Code:-**  *#include*<stdio.h>  int main() {      int a[10][10], b[10][10], c[10][10], n, i, j, k;      printf("Enter the value of N (N <= 10): ");      scanf("%d", & n);      printf("Enter the elements of Matrix-A: \n");  *for* (i = 0; i < n; i++) {  *for* (j = 0; j < n; j++) {              scanf("%d", & a[i][j]);          }      }      printf("Enter the elements of Matrix-B: \n");  *for* (i = 0; i < n; i++) {  *for* (j = 0; j < n; j++) {              scanf("%d", & b[i][j]);          }      }  *for* (i = 0; i < n; i++) {  *for* (j = 0; j < n; j++) {              c[i][j] = 0;  *for* (k = 0; k < n; k++) {                  c[i][j] += a[i][k] \* b[k][j];              }          }      }      printf("The product of the two matrices is: \n");  *for* (i = 0; i < n; i++) {  *for* (j = 0; j < n; j++) {              printf("%d\t", c[i][j]);          }          printf("\n");      }  *return* 0;  }  **3.** Read a matrix and print diagonal element and its sum  **Code:-**  *#include*<stdio.h>  void main()  {      int mat[12][12];      int i,j,row,col,sum=0;      printf("Enter the number of rows and columns for 1st matrix\n");      scanf("%d%d",&row,&col);      printf("Enter the elements of the matrix\n");  *for*(i=0;i<row;i++)      {  *for*(j=0;j<col;j++)          {              scanf("%d",&mat[i][j]);          }      }      printf("The matrix\n");  *for*(i=0;i<row;i++)      {  *for*(j=0;j<col;j++)          {              printf("%d\t",mat[i][j]);          }          printf("\n");      }  *//To add diagonal elements*  *for*(i=0;i<row;i++)      {  *for*(j=0;j<col;j++)          {  *if*(i==j)              {                  sum=sum+mat[i][j];              }          }      }      printf("The sum of diagonal elements of a square matrix = %d\n",sum);  }  **4.** Check a given matrix is a sparse matrix or not.  **Code:-**  **5.** Print the upper triangular matrix.  **Code:-** |
| **Lab 17** | **A** | **Write following programs in C. (Pointer)** |
|  |  | **1.** Print value and address of a variable.  **Code:-**  *#include*<stdio.h>  int main()  {     int a;     printf("\nEnter Any Number : ");     scanf("%d",&a);     printf("\nThe Number you Entered Is : %d ",a);     printf("\nThe Number You Entered Is Stored At This Location : %p",&a);  *return* 0;  }  **2.** Demonstrate int, float, double and char pointer.  **Code:-**  *// Demonstrate int, float, double and char pointer.*  *#include*<stdio.h>  int main(){      int a=10;      float b=1.23;      char c='2';      double d=50;        int \*pint =&a;      float \*pfloat=&b;      char \*pchar=&c;      double \*pdou=&d;        printf("value of a(int) = %d\n",a);      printf("addrees of a(int) = %p\n",pint);      printf("value of a(int) using pointer = %d\n", \*pint);        printf("value of b(float) = %f\n",b);      printf("addrees of b(float) = %p\n",pfloat);      printf("value of b(float) using pointer = %f\n", \*pfloat);        printf("value of c(char) = %c\n",c);      printf("addrees of c(char) = %p\n",pchar);      printf("value of c(char) using pointer = %c\n", \*pchar);        printf("value of d(double) = %lf\n",d);      printf("addrees of d(double) = %p\n",pdou);      printf("value of d(double) using pointer = %lf\n", \*pdou);  }  **3.** Calculate sum of two numbers using pointer.  **Code:-**  *#include* <stdio.h>  int main()  {     int first, second, \*p, \*q, sum;     printf("Enter two integers to add\n");     scanf("%d%d", &first, &second);     p = &first;     q = &second;     sum = \*p + \*q;     printf("Sum of the numbers = %d\n", sum);  *return* 0;  }  **4.** Swap value of two numbers using pointer.  **Code:-**  *#include* <stdio.h>  int main()  {     int x, y, \*a, \*b, temp;     printf("Enter the value of x and y\n");     scanf("%d%d", &x, &y);     printf("Before Swapping\nx = %d\ny = %d\n", x, y);     a = &x;     b = &y;     temp = \*b;     \*b = \*a;     \*a = temp;     printf("After Swapping\nx = %d\ny = %d\n", x, y);  *return* 0;  }  **5.** Store n elements in an array and print the elements using pointer.  **Code:-**  *#include* <stdio.h>  int main()  {      int arr[100];      int N, i;      int \* ptr = arr;      printf("Enter size of array: ");      scanf("%d", &N);      printf("Enter elements in array:\n");  *for* (i = 0; i < N; i++)      {          scanf("%d", ptr);          ptr++;      }      ptr = arr;      printf("Array elements: ");  *for* (i = 0; i < N; i++)      {          printf("%d, ", \*ptr);          ptr++;      }  *return* 0;  } |
| **Lab 17** | **B** | **Write following program in C. (Pointer)** |
|  |  | **1.** Copy one array to another using pointers.  **Code:-**  **2.** Swap two arrays using pointers.  **Code:-**  **3.** Add two matrix using pointers.  **Code:-**  **4.** Find length of string using pointers.  **Code:-**  **5.** Sort array using pointers.  **Code:-** |
| **Lab 18** | **A** | **Write following programs in C. (User Defined Function)** |
|  |  | **1.** Add two numbers using function.  **Code:-**  *#include*<stdio.h>  void add(int,int);  int main()  {      int a,b;      printf("enter the value of a:");      scanf("%d",&a);      printf("enter the value of b:");      scanf("%d",&b);        add(a,b);  *return* 0;  }  void add(int a,int b)  {      printf("%d",a+b);  }  **2.** Find maximum and minimum between two numbers using function.  **Code:-**  *#include*<stdio.h>  int max(int c,int d);  int min(int c,int d);  int main()  {    int a,b,c,d;    printf("enter the value of a:");    scanf("%d",&a);    printf("enter the value of b:");    scanf("%d",&b);    c=max(a,b);    printf("maximum number: %d\n",c);    d=min(a,b);    printf("minimum number : %d",d);  }   int max(int c,int d)   {  *if*(c>=d)       {  *return* c;       }  *else*       {  *return* d;       }   }   int min(int c,int d)   {  *if*(c<=d)       {  *return* c;       }  *else*       {  *return* d;       }   }  **3.** Count simple interest using function.  **Code:-**  *#include*<stdio.h>  float simpleinterest(float a,float b,float c);  int main()  {      float principle,ROI,time\_period,SI;      printf("Enter The Principle amount : ");      scanf("%f",&principle);      printf("Enter The Rate Of Interest : ");      scanf("%f",&ROI);      printf("Enter The Time Period : ");      scanf("%f",&time\_period);      SI=simpleinterest(principle,ROI,time\_period);      printf("The Simple Interest is : %f",SI);  }  float simpleinterest(float a,float b,float c)  {      float SI;      SI=(a\*b\*c)/100;  *return* SI;  }  **4.** Return the maximum of three floating-point numbers.  **Code:-**  *#include*<stdio.h>  float max(float a,float b, float c);  int main()  {      float a,b,c,d;      printf("Enter The First Number : ");      scanf("%f",&a);      printf("Enter the second Number : ");      scanf("%f",&b);      printf("Enter the Third Number : ");      scanf("%f",&c);      d=max(a,b,c);      printf("The Maximum Number is : %f",d);  }  float max(float a,float b,float c)  {  *if*(a>b){  *if*(a>c){  *return* a;          }  *else*{  *return* c;          }        }  *else*{  *if*(b>c){  *return* b;          }  *else*{  *return* c;          }      }  }  **5.** Swap two numbers using call by value and call by reference.  **Code:-**  *#include*<stdio.h>  void callbyvalue(int , int);  void callbyrefer(int \*,int \*);  int main(){      int x,y;      printf("enter num :");      scanf("%d", &x);      printf("enter num :");      scanf("%d", &y);      callbyvalue(x,y);      printf("\n using in call by value :%d %d",x,y);      callbyrefer(&x,&y);      printf("\n using in refer :%d %d",x,y);  }  void callbyvalue(int x, int y){      int temp = x;      x=y;      y=temp;    }  void callbyrefer(int \*x,int \*y){      int temp = \*x;      \*x=\*y;      \*y=temp;    } |
| **Lab 18** | **B** | **Write following programs in C. (User Defined Function)** |
|  |  | **1.** Generate Fibonacci series of N given number using function name fibbo().  **Code:-**  **2.** Check whether a number is prime, Armstrong or perfect number using function. (create custom library)  **Code:-**  **3.** Find all prime numbers between given interval using functions.  **Code:-**  **4.** Create a menu driven program to implement own string.h library, (without using built-in string functions)  **Code:-**  **5.** Create a function that converts amount into words. (i.e. 9241:Nine Thousand Two Hundred Forty One)  **Code:-** |
| **Lab 19** | **A** | **Write following programs in C. (User Defined Functions and Built-In String Functions)** |
|  |  | **1.** Find factorial of a number using function and recursive function.  **Code:-**  **i)** Using function.  *#include*<stdio.h>  int fact(int x);  int main()  {      int i=1,n,f;      printf("Enter the Value of n : ");      scanf("%d",&n);      f=fact(n);      printf("factorial of the given number is : %d",f);  }  int fact(int n){      int i=1,fact=1;  *for* ( i=1;i<=n;i++)      {          fact=fact\*i;      }  *return* fact;  }  **ii)** Using recursive function.  *#include*<stdio.h>  int fact(int x);  int main()  {      int i=1,n,f;      printf("Enter the Value of n : ");      scanf("%d",&n);      f=fact(n);      printf("factorial of the given number is : %d",f);  }  int fact(int x){      int f;  *if*(x==0||x==1)  *return* 1;  *else*      {          f=x\*fact(x-1);  *return* f;      }  }  **2.** Pass an array in function to print array elements.  **Code:-**  *#include*<stdio.h>  void getArray(int, int[]);  void printArray(int, int[]);  int main(){    int n, i=0;    printf("Enter The size of array : ");    scanf("%d", &n);      int arr[n];      getArray(n, arr);    printArray(n, arr);  }  void getArray(int n , int arr[]){    int i=0;  *for*(i = 0; i < n; i++){      printf("enter arr ");      scanf("%d",&arr[i]);    }  }  void printArray(int n , int arr[]){    int i=0;  *for*(i = 0; i < n; i++){      printf("array = %d\n", arr[i]);    }  }  **3.** Use string handling function strlen(), strcpy(), strcat(), strrev(), strlwr() and strupr().  **Code:-**  *#include*<stdio.h>  *#include*<string.h>  int main()  {      int i;      char a[100],b[100];      printf("Enter a 1st String : ");      scanf("%s",&a);      printf("Enter a 2nd String : ");      scanf("%s",&b);      i=strcmp(a,b);  *if*(i==0)      {          printf("Both Are Same\n");      }  *else*      {          printf("Not Same\n");      }      printf("Concatenate Is : %s\n",strcat(b,a));      printf("The Length of The String Is : %d\n",strlen(a));      printf("Copied String Is : %s\n",strcpy(b,a));      printf("String Upper Case Is : %s\n",strupr(a));      printf("String Lower Case Is : %s\n",strlwr(a));      printf("Reverse Is : %s\n",strrev(a));  }  **4.** Find a character from given string.  **Code:-**  *#include*<stdio.h>  int main()  {      char a[20], ch,flag=1;      int i=0;        printf("Enter a string : \n");      gets(a);      printf("Enter the character u wanna search in a string : \n");      scanf("%c",&ch);      printf("Positions where it occurs are : \n");  *for*(i=0;a[i]!= '\0';i++){  *if*(a[i]==ch){              printf("%d",i+1);              flag=0;          }      }  *if*(flag==1){          printf("not found");      }  *return* 0;  }  **5.** Replace a character in given string.  **Code:-** |
| **Lab 19** | **B** | **Write following programs in C. (User Defined Functions)** |
|  |  | **1.** Find power of any number using recursion.  **Code:-**  *#include*<stdio.h>  *#include*<math.h>  int main()  {      int base,power,c;      printf("\nEnter the Base number:\t");      scanf("%d", &base);      printf("\nEnter the Power Number:\t");      scanf("%d", &power);      c=poweroffunction(base,power);      printf("Answer ==> %d",c);  *return* 0;  }  int poweroffunction(int base, int power)  {      int ans;      ans=pow(base,power);  *return* ans;  }  **2.** Scan a character string passed as an argument and convert all lowercase string to uppercase string.  **Code:-**  *#include*<stdio.h>  *#include*<string.h>  int main()  {      char s[100];      printf("\nEnter the String:");      gets(s);      string(s);  *return* 0;  }  void string(char s[100])  {       printf("\nUpperCase ==> %s", strupr(s));      printf("\nLowerCase ==> %s", strlwr(s));  }  **3.** Swap elements of two integer arrays using user define function.  **Code:-**  **4.** Find reverse of any number using recursion.  **Code:-**  *#include*<stdio.h>  *#include*<string.h>  int rev(int);  int main()  {      int a,c;      printf("\nEnter the Number:");      scanf("%d", &a);      c=rev(a);      printf("\nReverse --> %d", c);  *return* 0;  }  int rev(int a)  {      int tmp,sum=0;  *while*(a>0)      {          tmp=a%10;          sum=(sum\*10)+tmp;          a=a/10;      }  *return* sum;  }  **5.** C program find nCr (Combination) and nPr (Permutation). (Formula: nCr + n!/(r!\*(n-1)!),nPr = n!/(n-r)!)  **Code:-**  *#include*<stdio.h>  *#include*<math.h>  int ncr(int,int);  int main()  {      int n,r,c;      printf("\nEnter the n in nCr:\t");      scanf("%d", &n);      printf("\nEnter the r in nCr:\t");      scanf("%d", &r);      c=ncr(n,r);      printf("Answer ==>%d", c);  *return* 0;  }  int ncr(int n,int r)  {      int a,sum1=1,sum2=1,sum=0;  *if*(n>r)      {  *for*(a=n;a>=r;a--)          {              sum1=sum1\*a;          }  *for*(a=r;a>=1;a--)          {              sum2=sum2\*a;          }          sum=sum1/sum2;  *return* sum;      }  *else*      {          printf("\nNot Valid!");      }  } |
| **Lab 20** | **A** | **Write following program in C. (Structure and union)** |
|  |  | **1.** Create, declare and initialize structure employee.  **Code:-**  *#include*<stdio.h>  struct employee  {      char Name[100];      int ID;      int Salary;  };  int main()  {      struct employee emp;      printf("\nEnter the name of employee : ");      scanf("%s",&emp.Name);      printf("\nEnter the employee ID : ");      scanf("%d",&emp.ID);      printf("\nEnter the Salary of an employee : ");      scanf("%d",&emp.Salary);      printf("\nName : %s",emp.Name);      printf("\nEmployee ID : %d",emp.ID);      printf("\nSalary : %d",emp.Salary);  *return* 0;    }  **2.** Create a structure book with book title, author, publication, and price. Read data of 3 books and display.  **Code:-**  *#include*<stdio.h>   struct Book  {      char Title[100];      char Author[100];      char Publication[100];      int Price;   };   int main()   {      struct Book b1,b2,b3;  *//b1*      printf("\nEnter the Title of Book : ");      scanf("%s",&b1.Title);       printf("\nEnter the Author of Book : ");      scanf("%s",&b1.Author);       printf("\nEnter the Publication of Book : ");      scanf("%s",&b1.Publication);       printf("\nEnter the price of Book : ");      scanf("%d",&b1.Price);  *//b2*      printf("\nEnter the Title of Book : ");      scanf("%s",&b2.Title);       printf("\nEnter the Author of Book : ");      scanf("%s",&b2.Author);       printf("\nEnter the Publication of Book : ");      scanf("%s",&b2.Publication);       printf("\nEnter the price of Book : ");      scanf("%d",&b2.Price);  *//b3*      printf("\nEnter the Title of Book : ");      scanf("%s",&b3.Title);       printf("\nEnter the Author of Book : ");      scanf("%s",&b3.Author);       printf("\nEnter the Publication of Book : ");      scanf("%s",&b3.Publication);       printf("\nEnter the price of Book : ");      scanf("%d",&b3.Price);  *//printing*      printf("\nThe Title of First Book is : %s",b1.Title);      printf("\nThe Author of First Book is : %s",b1.Author);      printf("\nThe Publication of First Book is : %s",b1.Publication);      printf("\nThe Price of First Book is : %d",b1.Price);      printf("\nThe Title of Second Book is : %s",b2.Title);      printf("\nThe Author of Second Book is : %s",b2.Author);      printf("\nThe Publication of Second Book is : %s",b2.Publication);      printf("\nThe Price of Second Book is : %d",b2.Price);      printf("\nThe Title of Third Book is : %s",b3.Title);      printf("\nThe Author of Third Book is : %s",b3.Author);      printf("\nThe Publication of Third Book is : %s",b3.Publication);      printf("\nThe Price of Third Book is : %d",b3.Price);   }    **3.** Demonstrate difference between structure and union.  **Code:-**  *#include*<stdio.h>  struct Student1  {      char name;      int enroll;      float spi;  };  union Student2  {      char name;      int enroll;      float spi;  };  int main()  {      struct Student1 S1;      printf("\nSize of structure : %d",sizeof(S1));      union Student2 S2;      printf("\nSize of Union : %d",sizeof(S2));  }  **4.** Create structure student with name, percentage and age. Read data pf 5 student using array of structure  **Code:-**  *#include*<stdio.h>  struct student{      char name[100];      float percentage;      int age;  };  int main(){      struct student s[5];      int i;    *for*(i=0; i < 5; i++){          printf("enter name of student %d : ", i+1);          scanf("%s", &s[i].name);          printf("enter percentage of student %d : ", i+1);          scanf("%f", &s[i].percentage);          printf("enter age of student %d : ", i+1);          scanf("%d", &s[i].age);      }    *for*(i=0; i < 5; i++){          printf("name is %s age is %d and has %f Percentage \n",s[i].name,s[i].age,s[i].percentage);      }  } |
| **Lab 20** | **B** | **Write following programs in C. (Structure and union)** |
|  |  | **1.** Demonstrate structure pointer.  **Code:-**  **2.** Demonstrate nested structure.  **Code:-**  **3.** Add two distance in feet and inches using structure.  **Code:-**  **4.** Add two times hh,mm,ss using structure.  **Code:-** |
| **Lab 21** | **A** | **Write following programs in C. (File Handling)** |
|  |  | **1.** Create, open and close a file.  **Code:-**  **2.** Count chars, spaces, tabs and new lines in file.  **Code:-**  **3.** Demonstrate function fprintf(), fscanf(), fputc(), fget(), fseek() and rewind().  **Code:-**  **4.** Append one file at the end of other.  **Code:-**  **5.** Copy one file to another file.  **Code:-** |
| **Lab 21** | **B** | **Write following programs in C. (File Handling )** |
|  |  | **1.** Print contents of file in reverse order.  **Code:-**  **2.** Capitalize first letter of each word in file.  **Code:-**  **3.** Merge alternate lines from two files.  **Code:-**  **4.** Capitalize the first letter of every word in a file.  **Code:-**  **5.** Delete all blank lines in a file then insert a blank line after the third line in file.  **Code:-** |
| **Lab 22** | **A** | **Write following programs in C. (Dynamic Memory Allocation)** |
|  |  | **1.** Allocate and de-allocate memory for int, char and float variable at run time.  **Code:-**  **2.** Calculate the sum of n numbers entered by the user using malloc().  **Code:-**  **3.** Calculate the sum of n numbers entered by the user using calloc().  **Code:-**  **4.** Allocate dynamic memory for structure variable.  **Code:-** |