**Programming In C**

**Lab Manual**

**Paper Code ES -154**

**Semester: 2**



**Guru Tegh Bahadur Institute of Technology**

**Department of Information Technology**

**Programming in C Syllabus**





**Programming in C List of Practical’s**

|  |  |  |
| --- | --- | --- |
| **Basics Of C** |  |  |
| **Question 1** | **1.****2.** | **Write A Program To Add Two Numbers.****Description:****Both The Numbers Should Be Asked From User.****Both The Numbers And Sum Should Be In Floating Point.** |
| **Question 2** | **1.****2.** | **Write A Program To Calculate The Simple Interest****Description:****Ask For The Values Of Principle, Rate And Time From User.****If Value Of Principle, Rate Or Time Is Negative Or Zero An Appropriate Error Is To Be Displayed On The Screen And Program Should Terminate.**  |
| **Question 3** | **1.****2.** | **Write A Program To Calculate The Area And Perimeter Of A Rectangle.****Description:****Ask For The Values Of Length And Breadth From User.****If Value Of Length And Breadth Is Negative Or Zero An Appropriate Error Is To Be Displayed On The Screen And Program Should Terminate.** |
| **Question 4** | **1.****2.** | **Write A Program To Accept The Marks Of Five Subjects And Find The Total And Percentage.****Description:****Ask For The Values Of Five Subjects From User.****If Value Of Any Of Five Subjects Is Negative Or Zero Or 100 An Appropriate Error Is To Be Displayed On The Screen And Program Should Terminate.** |
| **Question 5** | **1.****2.** | **Write A Menu Driven Program To Convert Fahrenheit Temperature To Centigrade Or Centigrade To Fahrenheit Temperature.****Description:****Ask For The Values Of Fahrenheit Or Centigrade From User.** **Ask Value Of Choice From User, If Choice Is 1 Then Convert Fahrenheit Temperature To Centigrade Or If Choice Is 2 Then Convert Centigrade To Fahrenheit Temperature.** |
| **Question 6** |  | **Write A Program To Accept A Three Digit Number And Find The Sum Of Digits Of The Number Without Using Loop.**  |
| **Question 7** |  | **Write A Program To Accept A Three Digit Number And The Reverse Number Without Using Loop.** |
| **If condition** |  |  |
| **Question 8** | **1.** | **Write A Program To Accept A Number From User And Check If It Is Even Or Odd.****Description:****Generate Appropriate Error If The Number Entered Is Zero Or Negative.** |
| **Question 9** | **1.** | **Write A Program To Check If The Given Year Is A Leap Year.****Description:****Generate Appropriate Error If The Year Value Entered Is Zero Or Negative.** |
| **Question 10** |  | **Write A Program To Find It The Number Is Positive, Negative Or Zero.** |
| **Question 11** | **1****2.** | **Write A Program To Find The Largest Of Three Numbers Using Nested If.****Description:****Generate Appropriate Message If The Numbers Are Equal.****Should work for signed numbers also.**  |
| **Question 12** | **1** | **Write A Program To Accept The Marks Of Five Subjects And Find Grades Of The Students. Use Else If Ladder.****Description:****Generate Appropriate Message If The marks are greater than 100 or smaller than 0.** |
| **Question 13** |  | **Write A Program To Find The Larger Of Two Numbers Using Ternary Operator.** |
| **Conversions** | **1** | **Use nested ternary operator**  |
| **Question 14** |  | **Write A Program To Accept A Single Input Character And Check If It Is A Uppercase, Lowercase, Digit Or A Special Symbol.** |
| **Question 15** | **1.** | **Write A Program To Change The Case Of A Character Without Using The Standard Functions.****Description:****Generate Appropriate Message If The Character Entered Is Not An Alphabet.** |
| **Question 16** | **1.****2** | **Write A Program To Display Ascii Number Of The Alphabets And Digits.****Description:****Generate Appropriate Message If The Character Entered Is Not An Alphabet Or Digit.****Find a method to display appropriate message af ascii on keystroke does not exist.** |
| **Question 17** | **1** | **Write A Program To Convert A Decimal Number To A Binary Number To Octal Number.****Should work for unsigned numbers only** |
| **Loops** |  |  |
| **Question 18** | **1.** | **Write A Program To Find The Factorial Of A Given Number.****Description:****Generate Appropriate Error If The Number Entered Is Zero Or Negative And Repeatedly Ask User For Correct Value.****Function shoul call itself again and again till the factorial is calculated** |
| **Question 19** | **1.** | **Write A Program To Find The Power Of A Number.****Description:****Generate Appropriate Error If The Exponentiation Number Entered Is Zero Or Negative And Repeatedly Ask User For Correct Value.** |
| **Question 20** | **1.** | **Write A Program To Find All Prime Numbers Between 1 To N.****Description:****Generate Appropriate Error If Value Of N Entered Is Zero Or Negative And Repeatedly Ask User For Correct Value.** |
| **Question 21** | **1.** | **Write A Program To Print The Fibonacci Series Till The Term Number Entered From User.****Description:****Generate Appropriate Error If Value Of Term Number Entered Is Zero Or Negative And Repeatedly Ask User For Correct Value.** |
| **Question 22** | **1.** | **Write A Program To Find Sum Of Digits Of A Number Using Do-While.****Description:****The Number Entered Must Be Three Digit Number Or More, If It Is Not Then Display Error Message And Repeatedly Ask User For Correct Value.** |
| **Question 23** |  | **Write A Program To Find Sum And Average Of 10 Different Numbers Using While Loop.** |
| **Question 24** |  | **Write A Program To Print The Following Pattern**  |
|  |  | **A** |
|  |  | **A B** |
|  |  | **A B C** |
|  |  | **A B C D** |
|  |  | **A B C D E** |
| **Question 25** |  | **Write A Program To Print The Following Pattern Using Nested For.** |
|  |  | **5 4 3 2 1**  |
|  |  | **4 3 2 1**  |
|  |  | **3 2 1**  |
|  |  | **2 1** |
|  |  | **1** |
| **Question 26** |  | **Write A Program To Print The Following Pattern Using Nested For Loop.** |
|  |  | **987654321** |
|  |  | **11111111** |
|  |  | **9876543** |
|  |  | **333333** |
|  |  | **98765** |
|  |  | **5555** |
|  |  | **987** |
|  |  | **77** |
|  |  |  |
| **Question 27** |  | **Write A Program To Print The Following Pattern** |
|  |  | **A B C D E F E D C B A** |
|  |  | **A B C D E E D C B A** |
|  |  | **A B C D D C B A** |
|  |  | **A B C C B A** |
|  |  | **A B B A** |
|  |  | **A A** |
| **Question 28** | **1.****2.****3.** | **Write A Program To Generate Following Series:** **Sum=X + X/2! + X/4! + ………X/N!****Description:****Ask For Value Of X And N From User.****If Value Of X Is Zero Then Raise Error And Repeatedly Ask For Correct Value From User.****If Value Of N Is Zero Or Negative Then Raise Error And Repeatedly Ask For Correct Value From User.** |
| **Question 29** | **1.****2.****3.****4.** | **Write A Program To Perform A Calculator Using Switch Case.****Description:****Ask For Two Numbers And Choice.****Operations To Be Performed Are : +, - , \* , / , %****If Value Of Choice Is Invalid Then Repeatedly Ask For Valid Choice Value.****Check For Zero Value Of Denominator For Division And Remainder.**  |
| **Arrays****Question 30** |  | **Write A Program To Accept 10 Numbers In A Array And Find The Largest And Smallest Number.** |
| **Question 31** |  | **Write A Program To Sort An Array In Ascending Order Using Bubble Sort.** |
| **Question 32** | **1.****2.** | **Write A Program To Search An Element In An Array.****Description:****Ask For Size Of Array, Array And Item To Be Searched From User.****Display Position Of The Element If Element Is Found And Appropriate Message Is Element Is Not Found.** |
| **Question 33** |  | **Write A Program To Add Elements Of Two Square Matrices And Store The Result In The Third Matrix.** |
| **Question 34** |  | **Write A Program To Subtract Elements Of Two Square Matrices And Store The Result In The Third Matrix.** |
| **Question 35** |  | **Write A Program To Multiply Elements Of Two Square Matrices And Store The Result In The Third Matrix.** |
| **Question 36** | **1.****2.****3.****4.****5.** | **Write A Program To Display And Find Sum Of Both The Diagonals Of A Square Matrix.****Description:****Ask For The Number Of Rows And Columns Of Matrix From The User.****Ask For The Matrix From User.****Display The Complete Matrix.****Display The Diagonals Of The Matrix.****Display The Sum.** |
| **Question 37** | **1.****2.****3.****4.** | **Write A Program To Display Upper Triangular Section Of A Square Matrix.****Description:****Ask For The Number Of Rows And Columns Of Matrix From The User.****Ask For The Matrix From User.****Display The Complete Matrix.****Display The Upper Triangular Portion Of The Matrix.** |
| **Functions****Question 38** | **1.****2.** | **Write A Program To Calculate Cube Of Numbers 1 To 10 Using Functions.****Description:****Function Should Receive Number As Argument.****Function Should Return The Cube Of Number, The Cube Should Be Displayed In Void Main.** |
| **Question 39** | **1.****2.** | **Write A Program To Find Factorial Of Number Using Functions.****Description:****Function Should Receive Number As Argument.****Function Should Return The Factorial Of Number, The Factorial Should Be Displayed In Void Main.** |
| **Question 40** | **1.****2.** | **Write A Program To Calculate Area Of Circle Using Functions.****Description:****Function Should Receive Radius As Argument.****Function Should Return The Area, The Area Should Be Displayed In Void Main.** |
| **Recursion** |  |  |
| **Question 41** |  | **Write A Program To Find The Factorial Of A Number Using Recursion.** |
| **Question 42** |  | **Write A Program To Find The Fibonacci Series Using Recursion.** |
| **Question 43** |  | **Write A Program To Find The Sum Of Digits Of A Number Using Recursion.** |
| **Pointers****Question 44** |  | **Write A Program To Swap Two Numbers Using Pointers And Functions.** |
| **Question 45** |  | **Write A Program To Add Two Matrices Using Pointers.** |
| **Strings****Question 46** |  | **Write A Program To Check Whether A String Is Palindrome Or Not.** |
| **Question 47** |  | **Write A Program To Count The Number Of Vowels In A String.** |
| **Question 48** | **1.****2.****3.** | **Write A Program To Design The Following Functions:****GTBIT\_Strlen Function: This Function Will Return The Length Of The String Passed As An Argument.****GTBIT\_Strcpy Function: This Function Make Copy Of The String Passed As An Argument.****GTBIT\_Strcat Function: This Function Will Concatenate The Two Strings Passed As An Argument.** |
| **Structures** |  |  |
| **Question 49** |  | **Write A Program To Ask And Display Details Of 10 Students Using Structure.** |
| **Question 50** | **1.** | **Write A Program To Copy A Structure Object Into Another Object Using Structures And Functions.****Description:****Function Should Receive Both Objects As Argument.** |
|  |  |  |
|  |  |  |

**Programming In C Question Bank**

**PROGRAM TO DISPLAY ASCII CODE OF A CHARACTER AND VICE VERSA.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**char india;**

**int v;**

**clrscr();**

**printf("ENTER A CHARACTER ");**

**scanf("%c",&india);**

**v=india;**

**printf("CHARACTER %c\n",india);**

**printf("ASCII VALUE %d\n",v);**

**getch();**

**}**

**MACRO**

**PROGRAM TO DEFINE A MACRO.**

**#include<stdio.h>**

**#include<conio.h>**

**#define pi 3.14**

**#define area\_circle(r) pi\*r\*r**

**void main()**

**{**

**float radius,area=0.0;**

**clrscr();**

**printf("ENTER RADIUS ");**

**scanf("%f",&radius);**

**area=area\_circle(radius);**

**printf("THE AREA OF CIRCLE IS %f",area);**

**getch();**

**}**

**FIND OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**unsigned int ii=-1;**

**clrscr();**

**printf("%d \n",ii); //-1**

**printf("%u \n",ii); //65535**

**getch();**

**}**

**FIND OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int a=10;**

**clrscr();**

**a <<= 1; //Shift Left 1010 1 Bit, Ans Will Be 20**

 **//Because 10100 After Shift**

**printf("%d \n",a);**

**getch();**

**}**

**FIND OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**clrscr();**

**printf("%d",printf("GTBIT")); //GTBIT5 , 5 BECAUSE**

**//GTBIT CONTAINS 5 CHARACTERS**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,j;**

**clrscr();**

**i=10;**

**j=i++;**

**printf("%d",j); //10**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,j,k;**

**clrscr();**

**i=1;**

**j=12;**

**k=13;**

**i= j == k;**

**printf("%d",i); //0**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,j;**

**clrscr();**

**i=10;**

**j=++i;**

**printf("%d",j); //11**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**unsigned int i=-1;**

**unsigned int j;**

**clrscr();**

**printf("%u",++i); //0**

**printf("%u",j=-i); //0**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i;**

**clrscr();**

**i=5;**

**printf("%d",i=++i==6); //1**

**getch();**

**}**

**IF CONDITION**

**PROGRAM TO FIND LARGEST AMONG THREE NUMBERS.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int a,b,c;**

**clrscr();**

**printf("ENTER a "); scanf("%d",&a);**

**printf("ENTER b "); scanf("%d",&b);**

**printf("ENTER c "); scanf("%d",&c);**

**if(a>b && a>c) { printf("%d",a); }**

**if(b>a && b>c) { printf("%d",b); }**

**if(c>a && c>b) { printf("%d",c); }**

**if(a==b && a==c)**

**{**

**printf("A = %d, B = %d, C = %d ARE EQUAL",a,b,c);**

**}**

**getch();**

**}**

**MENU DRIVEN PROGRAM ON TEMPERATURE CONVERSION. (CHARACTER CHOICE)**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**float frn,clc;**

**char value;**

**clrscr();**

**printf("YOUR CHOICE ");**

**printf("\nA = FOR FARAN TO CELCIUS");**

**printf("\nB = FOR CELCIUS TO FARAN\n");**

**scanf("%c",&value);**

**if(value=='B')**

**{**

**printf("CELCIUS TEMP ");**

**scanf("%f",&clc);**

**frn=(clc-32)/1.8;**

**printf("FARAN TEMP %f",frn);**

**}**

**else if(value=='A')**

**{**

**printf("FARAN TEMP ");**

**scanf("%f",&frn);**

**clc=1.8\*frn + 32;**

**printf("CELCIUS TEMP %f",clc);**

**}**

**else**

**{**

**printf("WRONG CHOICE");**

**}**

**getch();**

**}**

**PROGRAM TO CALCULATE GRADE**

**A GRADE IF MARKS ARE FROM 90 TO 100**

**B GRADE IF MARKS ARE FROM 75 TO 89**

**C GRADE IF MARKS ARE FROM 60 TO 74**

**D GRADE IF MARKS ARE FROM 40 TO 59**

**ELSE F GRADE**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**char ch;**

**float eng,maths,comp,che,phy,tot,av;**

**clrscr();**

**printf("ENTER ENGLISH MARKS "); scanf("%f",&eng);**

**printf("ENTER MATHS MARKS "); scanf("%f",&maths);**

**printf("ENTER COMPUTER MARKS "); scanf("%f",&comp);**

**printf("ENTER CHEMISTRY MARKS "); scanf("%f",&che);**

**printf("ENTER PHYSICS MARKS "); scanf("%f",&phy);**

**tot=eng+maths+comp+che+phy;**

**av=tot/5;**

**if(av>=90 && av<=100)**

**{**

**ch='A';**

**}**

**else if(av>=60 && av<=74)**

**{**

**ch='C';**

**}**

**else if(av>=75 && av<=89)**

**{**

**ch='B';**

**}**

**else if(av>=40 && av<=59)**

**{**

**ch='D';**

**}**

**else**

**{**

**ch='F';**

**}**

**printf("\n%f %f %c",tot,av,ch);**

**getch();**

**}**

**PROGRAM ON QUADRATIC EQUATION.**

**#include<stdio.h>**

**#include<conio.h>**

**#include<math.h>**

**void main()**

**{**

**int a,b,c;**

**float D;**

**float R1,R2;**

**clrscr();**

**printf("ENTER A "); scanf("%d",&a);**

**printf("ENTER B "); scanf("%d",&b);**

**printf("ENTER C "); scanf("%d",&c);**

**D=(b\*b)-(4\*a\*c);**

**if(D>0)**

**{**

**R1=(-b + sqrt(D))/2\*a;**

**R2=(-b - sqrt(D))/2\*a;**

**printf("ROOTS ARE REAL\n");**

**printf("ROOT 1 %f\n",R1);**

**printf("ROOT 2 %f\n",R2);**

**}**

**else if(D==0)**

**{**

**R1=(-b)/2\*a;**

**R2=(-b)/2\*a;**

**printf("ROOTS ARE REAL AND EQUAL\n");**

**printf("ROOT 1 %f\n",R1);**

**printf("ROOT 2 %f\n",R2);**

**}**

**else**

**{**

**printf("ROOTS ARE COMPLEX AND IMAGINARY\n");**

**}**

**getch();**

**}**

**CONCEPT OF CHANGING THE CASE OF A CHARACTER.**

**#include<string.h>**

**#include<conio.h>**

**void main()**

**{**

**char ch;**

**clrscr();**

**printf("ENTER A CHARACTER "); scanf(" %c",&ch);**

**if(ch>='A' && ch<='Z')**

**{**

**ch=ch+32;**

**printf("THE CHANGED CASE CHARACTER IS %c",ch);**

**}**

**else if(ch>='a' && ch<='z')**

**{**

**ch=ch-32;**

**printf("THE CHANGED CASE CHARACTER IS %c",ch);**

**}**

**getch();**

**}**

**SWITCH CASE.**

**DESIGN A CALCULATOR USING SWITCH CASE.**

**#include<stdio.h>**

**#include<conio.h>**

**#include<process.h>**

**void main()**

**{**

**int n;**

**float num1,num2,ans;**

**clrscr();**

**printf("ENTER CHOICE FOR CALCULATOR \n");**

**printf("1 FOR +\n");**

**printf("2 FOR -\n");**

**printf("3 FOR \*\n");**

**printf("4 FOR /\n");**

**printf("5 FOR %\n");**

**scanf("%d",&n);**

**printf("NOW ENTER FIRST NUMBER ");**

**scanf("%f",&num1);**

**printf("NOW ENTER SECOND NUMBER ");**

**scanf("%f",&num2);**

**switch(n)**

**{**

**case 1: ans=num1+num2;**

**break;**

**case 2: ans=num1-num2;**

**break;**

**case 3: ans=num1\*num2;**

**break;**

**case 4: ans=num1/num2;**

**break;**

**case 5: ans=(int)num1%(int)num2;**

**break;**

**default: printf("WRONG CHOICE");**

**exit(0);**

**}**

**printf("ANSWER IS %f",ans);**

**getch();**

**}**

**PROGRAM ON ELSE IF TO TELL DAY.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int day;**

**clrscr();**

**printf("ENTER A DAY NUMBER ");**

**scanf("%d",&day);**

**if(day==1)**

**{ printf("MONDAY\n"); }**

**else if(day==2)**

**{ printf("TUESDAY\n"); }**

**else if(day==3)**

**{ printf("WEDNESDAY\n"); }**

**else if(day==4)**

**{ printf("THRUSDAY\n"); }**

**else if(day==5)**

**{ printf("FRIDAY\n"); }**

**else if(day==6)**

**{ printf("SATURDAY\n"); }**

**else if(day==7)**

**{ printf("SUNDAY\n"); }**

**else**

**{ printf("WRONG DAY\n"); }**

**getch();**

**}**

**PROGRAM ON SWITCH CASE TO TELL DAY.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int day;**

**clrscr();**

**printf("ENTER A DAY NUMBER ");**

**scanf("%d",&day);**

**switch(day)**

**{**

**case 1:printf("MONDAY\n"); break;**

**case 2:printf("TUESDAY\n"); break;**

**case 3:printf("WEDNESDAY\n"); break;**

**case 4:printf("THRUSDAY\n"); break;**

**case 5:printf("FRIDAY\n"); break;**

**case 6:printf("SATURDAY\n"); break;**

**case 7:printf("SUNDAY\n"); break;**

**default:printf("WRONG DAY\n");**

**}**

**getch();**

**}**

**PROGRAM TO CALCULATE ELECTRICITY BILL.**

**100 UNITS - 3**

**101-150 UNITS - 5**

**151-200 UNITS - 6**

**METER RENT - 500**

**#include<conio.h>**

**#include<stdio.h>**

**void main()**

**{**

**int units,runits;**

**int rs,price;**

**clrscr();**

**rs=0;**

**printf("ENTER ELECTRICITY UNITS ");**

**scanf("%d",&units);**

**if(units>=151 && units<=200)**

**{**

**runits=units-150;**

**price=runits \* 6;**

**rs=rs+price;**

**}**

**if(units>=101 && units<=150)**

**{**

**runits=units-100;**

**price=runits \* 5;**

**rs=rs+price;**

**}**

**if(units>=0 && units<=100)**

**{**

**price=units \* 3;**

**rs=rs+price;**

**}**

**rs=rs+500;**

**printf("THE TOTAL BILL IS %d",rs);**

**getch();**

**}**

**PROGRAM WHICH DETECTS FOR A FLOATING POINT INPUT.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**float years;**

**int check;**

**float secs;**

**clrscr();**

**printf("INPUT YOUR AGE IN YEARS ");**

**check=scanf("%f",&years);**

**if(check==0)**

**{**

**printf("THE DATA ENTERED IS NOT FLOATING POINT\n");**

**}**

**if(check!=0)**

**{**

**secs=years\*365\*24\*60\*60;**

**printf("YOU HAVE LIVED FOR %f SECONDS\n",secs);**

**}**

**getch();**

**}**

**PROGRAM WHICH DISPLAYS HELLO! GTBIT ON SCREEN WITHOUT USING SEMICOLON.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**if(printf("HELLO! GTBIT")) { }**

**}**

**PROGRAM TO FIND THE LEAP YEAR.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int year;**

**clrscr();**

**printf("ENTER YEAR ");**

**scanf("%d",&year);**

**if((year%4==0 && year%100!=0) || (year%100==0))**

**{ printf("LEAP YEAR"); }**

**else**

**{ printf("NOT LEAP YEAR"); }**

**getch();**

**}**

**LOOPS**

**PROGRAM TO DISPLAY THE SUM OF EVEN NUMBERS (IF USED WITHIN FOR LOOP).**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,S=0;**

**clrscr();**

**for(i=1;i<=100;i++)**

**{**

 **if(i%2==0)**

 **{**

 **S=S+i;**

 **}**

**}**

**printf("EVEN NUMBER SUM IS %d",S);**

**getch();**

**}**

**PROGRAM TO PRINT FIBONACCI SERIES:**

**0 1 1 2 3 5 8 13**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int a,b,c,i;**

**clrscr();**

**a=0;**

**b=1;**

**printf("\nFIBONACCI SERIES IS \n\n");**

**printf("%d %d ",a,b);**

**for(i=3;i<=8;i++)**

**{**

 **c=a+b;**

 **printf("%d ",c);**

 **a=b;**

 **b=c;**

**}**

**getch();**

**}**

**PROGRAM TO CHECK FOR PRIME NUMBER.**

**#include<stdio.h>**

**#include<conio.h>**

**#include<process.h>**

**void main()**

**{**

**int num,i;**

**clrscr();**

**printf("\nENTER A NUMBER TO BE CHECKED FOR PRIME NUMBER\n");**

**scanf("%d",&num);**

**for(i=2;i<=num-1;i++)**

**{**

 **if(num % i==0)**

 **{**

 **printf("\nIT IS NOT PRIME\n");**

 **getch();**

 **exit(0);**

 **}**

**}**

**printf("\nNUMBER IS PRIME\n");**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,v,s=0;**

**clrscr();**

**for(i=1;i<=5;i++)**

**{**

**v=i\*3;**

**s=s+v;**

**}**

**printf("SUM IS %d",v);**

**getch();**

**}**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int x=0;**

**clrscr();**

**for(;;)**

**{**

 **if(x++ == 4) break;**

 **else continue;**

**}**

**printf("\n X = %07d",x);**

**getch();**

**}**

**OUTPUT:**

**X = 0000005**

**FIND THE OUTPUT:**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,j;**

**clrscr();**

**if(-1) {**

 **for(i=1;i<=3;i++)**

 **{**

 **for(j=1;j<=3;j++)**

 **{**

 **if(i==j) continue;**

 **if((j%3) > 1) break;**

 **printf("%d\n",i);**

 **}**

 **} }**

**printf("\nNOT CORRECT");**

**getch();**

**}**

**OUTPUT:**

**2**

**2**

**3**

**NOT CORRECT**

**PROGRAM TO PRINT SUM OF NUMBERS ON THE SCREEN USING WHILE LOOP.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,n,sum=0;**

**clrscr();**

**printf("ENTER THE LENGTH OF THE LOOP ");**

**scanf("%d",&n);**

**i=1;**

**while(i<=n)**

**{**

**printf("%d\n",i);**

**sum=sum+i;**

**i++;**

**}**

**printf("THE SUM IS %d\n",sum);**

**getch();**

**}**

**PROGRAM TO PRINT FACTORIAL ON THE SCREEN USING WHILE LOOP.**

**#include<stdio.h>**

**#include<conio.h>**

**void main()**

**{**

**int i,n;**

**long int f=1;**

**clrscr();**

**printf("ENTER THE NUMBER FOR FACTORIAL ");**

**scanf("%d",&n);**

**i=1;**

**while(i<=n)**

**{**

**f=f\*i;**

**i++;**

**}**

**printf("\nTHE FACTORIAL OF %d IS %ld",n,f);**

**getch();**

**}**

**ARRAYS AND FUNCTIONS**

**PROGRAM FOR BINARY SEARCH (ASCENDING ORDER ARRAY).**

**#include<stdio.h>**

**#include<conio.h>**

**int BINARY\_SEARCH(int arr[],int len,int item)**

**{**

**int top,bottom,mid;**

**top=0;**

**bottom=len-1;**

**mid=(top+bottom)/2;**

**do**

**{**

 **if(arr[mid]<item)**

 **{**

 **top=mid+1;**

 **mid=(top+bottom)/2;**

 **}**

 **else if(arr[mid]==item)**

 **{**

 **return (mid);**

 **break;**

 **}**

 **else if(arr[mid]>item)**

 **{**

 **bottom=mid-1;**

 **mid=(top+bottom)/2;**

 **}**

**}while(top<=bottom);**

**if(top>bottom)**

**{**

 **return (-1);**

**}**

**}**

**void main()**

**{**

**int a[10],ele,n,i,pos;**

**clrscr();**

**printf("\nENTER THE TOTAL ELEMENTS "); scanf("%d",&n);**

**printf("ENTER ARRAY ");**

**for(i=0;i<n;i++) { scanf("%d",&a[i]); }**

**printf("ENTER THE ELEMENT YOU WANT TO SEARCH "); scanf("%d",&ele);**

**pos=BINARY\_SEARCH(a,n,ele);**

**if(pos!=-1)**

**{**

**printf("POSITION %d",pos);**

**}**

**else**

**{**

**printf("ELEMENT NOT PRESENT");**

**}**

**getch();**

**}**

**PROGRAM FOR INSERTION INTO AN ARRAY AT A SPECIFIC POSITION**

**FUNCTION SHOULD RECEIVE ARRAY, SIZE OF ARRAY, NEW ELEMENT AND POSITION OF NEW ELEMENT TO BE INSERTED.**

**#include<stdio.h>**

**#include<conio.h>**

**#include<process.h>**

**void ARRAY\_INSERTION(int a[], int len, int pos, int ele)**

**{**

**int i;**

**for(i=len;i>pos;i--)**

**{**

 **a[i]=a[i-1];**

**}**

**a[pos]=ele;**

**len=len+1;**

**printf("\nDISPLAYING FINAL ARRAY ");**

**for(i=0;i<len;i++)**

**{**

 **printf("%d ",a[i]);**

**}**

**}**

**void main()**

**{**

**int arr[100];**

**int n,i;**

**int item;**

**int p;**

**clrscr();**

**printf("\nENTER THE TOTAL ELEMENTS ");**

**scanf("%d",&n);**

**printf("ENTER ARRAY ");**

**for(i=0;i<n;i++)**

**{**

**scanf("%d",&arr[i]);**

**}**

**printf("\nENTER THE ELEMENT TO BE INSERTED ");**

**scanf("%d",&item);**

**printf("\nENTER THE POSITION OF ELEMENT TO BE INSERTED ");**

**scanf("%d",&p);**

**if(p>n)**

**{**

**printf("\nABORTING ! POSITION OF INSERTION IS GREATER THAN ARRAY SIZE");**

**getch();**

**exit(0);**

**}**

**ARRAY\_INSERTION(arr, n, p, item);**

**getch();**

**}**

**PROGRAM FOR INSERTION INTO AN ARRAY (IN ASCENDING ORDER) AT A SPECIFIC POSITION FUNCTION SHOULD RECEIVE ARRAY, SIZE OF ARRAY, NEW ELEMENT.**

**#include<stdio.h>**

**#include<conio.h>**

**void ARRAY\_INSERTION(int a[], int len, int ele)**

**{**

**int i,pos;**

**for(i=0;i<len;i++)**

**{**

 **if(a[i]<=ele && a[i+1]>=ele)**

 **{**

 **pos=i+1;**

 **}**

**}**

**for(i=len;i>pos;i--)**

**{**

 **a[i]=a[i-1];**

**}**

**a[pos]=ele;**

**len=len+1;**

**printf("\nDISPLAYING FINAL ARRAY ");**

**for(i=0;i<len;i++)**

**{**

 **printf("%d ",a[i]);**

**}**

**}**

**void main()**

**{**

**int arr[100];**

**int n,i;**

**int item;**

**int p;**

**clrscr();**

**printf("\Nenter SIZE OF ORIGINAL ARRAY "); scanf("%d",&n);**

**printf("\nENTER THE ELEMENTS OF ARRAY ");**

**for(i=0;i<n;i++) { scanf("%d",&arr[i]); }**

**printf("\nENTER THE ELEMENT TO BE INSERTED "); scanf("%d",&item);**

**ARRAY\_INSERTION(arr, n, item);**

**getch();**

**}**

**PROGRAM FOR DELETION OF AN ELEMENT FROM AN ARRAY. FUNCTION SHOULD RECEIVE ARRAY, SIZE OF ARRAY, POSITION.**

**#include<stdio.h>**

**#include<conio.h>**

**#include<process.h>**

**void ARRAY\_DELETION(int a[], int len, int pos)**

**{**

**int i;**

**for(i=pos;i<len;i++)**

**{**

 **a[i]=a[i+1];**

**}**

**len=len-1;**

**printf("\nDISPLAYING FINAL ARRAY ");**

**for(i=0;i<len;i++)**

**{**

 **printf("%d ",a[i]);**

**}**

**}**

**void main()**

**{**

**int arr[100];**

**int n,i;**

**int item;**

**int p;**

**clrscr();**

**printf("\nENTER THE SIZE OF ORIGINAL ARRAY ");**

**scanf("%d",&n);**

**printf("\nENTER THE ELEMENTS OF ARRAY ");**

**for(i=0;i<n;i++) { scanf("%d",&arr[i]); }**

**printf("\nENTER THE ELEMENT TO BE DELETED "); scanf("%d",&item);**

**for(i=0;i<n;i++) {**

 **if(arr[i]==item)**

 **{**

 **p=i;**

 **break;**

 **} }**

**if(i==n) {**

**printf("\nABORTING ! POSITION OF ELEMENT NOT FOUND");**

**getch();**

**exit(0); }**

**ARRAY\_DELETION(arr, n, p);**

**getch(); }**

**PROGRAM TO SORT AN ARRAY USING SELECTION SORT.**

**#include<stdio.h>**

**#include<conio.h>**

**void SELECTION\_SORT(int a[], int len)**

**{**

**int j,i;**

**int smallest,pos,start,temp;**

**for(i=0;i<len;i++)**

**{**

**start=i; S1**

**smallest=a[start]; S2**

**pos=start; S3**

 **for(j=start;j<len;j++) S4**

 **{**

 **if(smallest > a[j]) S5**

 **{**

 **smallest=a[j]; S6**

 **pos=j; S7**

 **}**

 **}**

**temp=a[i]; S8**

**a[i]=a[pos]; S9**

**a[pos]=temp; S10**

**}**

**printf("\nDISPLAYING SORTED ARRAY ");**

**for(i=0;i<len;i++)**

**{**

 **printf("%d ",a[i]);**

**}**

**}**

**void main()**

**{**

**int arr[10],n,i;**

**clrscr();**

**printf("\nENTER THE TOTAL ELEMENTS ");**

**scanf("%d",&n);**

**printf("\nENTER ARRAY ");**

**for(i=0;i<n;i++)**

**{**

**scanf("%d",&arr[i]);**

**}**

**SELECTION\_SORT(arr, n);**

**getch();**

**}**

**PROGRAM FOR INSERTION SORT**

**#include<stdio.h>**

**#include<conio.h>**

**void insort(int a[],int n)**

**{**

**int i,j,temp;**

**for(i=1;i<n;i++) S1**

**{**

**temp=a[i]; S2**

**j=i-1; S3**

**while(temp<a[j] && j>=0) S4**

**{**

**a[j+1]=a[j]; S5**

**j=j-1; S6**

**}**

**a[j+1]=temp; S7**

**}**

**printf("\n\nSORTED ARRAY \n");**

**for(i=0;i<n;i++)**

**{**

**printf("DATA ELEMENTS [ %d ] %d\n",i,a[i]);**

**}**

**}**

**void main()**

**{**

**int ar[10],n1,i;**

**clrscr();**

**printf("PROGRAM FOR INSERTION SORT");**

**getch();**

**clrscr();**

**printf("ENTER ARRAY SIZE ");**

**scanf("%d",&n1);**

**for(i=0;i<n1;i++)**

**{**

**printf("DATA ELEMENTS [ i ] ",i);**

**scanf("%d",&ar[i]);**

**}**

**insort(ar,n1);**

**getch();**

**}**

**SAMPLE QUESTIONS C LANGUAGE:**

**1. Describe the basic features of a C language?**

**2. Discuss the programming style of a C language?
3. What is the role of semicolon in a C program?
4. What is the difference between a variable and a constant?
5. C language is said to be reach in data type. Discuss the various classes of data type available in C?
6. What do you understand by data qualifiers? What is the use of using such qualifiers?
7. What are the keywords used to define the following state with example?
1. Integral Data Type
2. Unsigned long integral data type
3. Floating point data type
4. signed character data type
5. signed short integral data type

8. What do you understand by ASCII value of a character? Can we use expressions including booth integral data type and character data type. Justify your answer.
9. What is escape sequence? When are these sequences required?
10. State whether following are true or false:
1. Every line of a C program must end with a Semicolon
2. C is not a case sensitive language
3. Every C program ends with a END word
4. main() is where program begins a execution
5. On one line in C program one can have only one statement
6. Closing braces of a C program signifies logical end of the program
7. Syntax error and logical errors are same.
8. Void is just a notation used with main ().
9. A printf statement can generate only one line of output.
10. Define and include are compiler directive statements.
11. What characters comprise C character set?
12. What are rules for naming identifiers? Can we include digits? Is lowercase equivalent to uppercase? How many characters can be included in an identifier name? Are all characters equally significant
13. What are keywords? What restrictions apply to their use?
14. What are 4 basic data types of C?
15. What are 4 basic data type qualifiers? To which data type each qualifier can be applied?
16. What are four basic types of constants in C
17. What rules applied to numeric-constants.
18. What rules apply to integer constants? How are decimal, octal, hexadecimal constants distinguished from each other.
19. What is the largest permissible magnitude of integer constant? State your answer in decimal, octal and hexadecimal
20. What is difference between signed, unsigned integer constants, long and short integer constants? How they differ from ordinary integers.
21. What are different ways in which floating point constants can be written? Discuss purpose of exponential in floating point constant
22. Discuss largest value at can be taken by floating point constant how is it different form integers
23. What is ASCII character set?
24. What is escape sequence? What is its purpose? Discuss standard and non standard escape sequences.
25. What is a string constant and how does it differ form character constants.

Control Structures in C
26. How does a expression statement differ from a compound statement? Explain with eg.
27. What is the purpose of if-else statement? What are the two different form of if-else statement? How do they differ? Explain with eg.
28. Describe the situation when Switch statement should be used? Describe the syntactic rules of using a Switch Statement.?
29. What do you understand by Case Label? What kind of expression can be used with a Case label?
30. What is the purpose of While loop? When is the logical expression evaluated? What is the minimum number of times a while loop can be executed?
31. How does do-while statement differ from while statement? Summarize the syntactic rules that need to be followed while using the two loops.
32. Explain FOR statement? How does it differ from the other looping statement?
33. What is the purpose of index in FOR statement? Can any of the three initial expression in the for statement be omitted? Explain with example
34. What rules apply to nesting of loops? Is it possible to embed one kind of loop in other discussed with example.
35. What is the use of default alternative in Switch statement?
36. Compare use of switch with nested if-else statement.
37. What is the purpose of break statement? With which control statement break can be used?
38. Consider a situation where break statement is used with innermost of several nested control statements. What happen when the break statement is executed?
39. What is the purpose of using a Continue statement Explain with example? With which control statement continue statement can be used?
40. What do you understand by a comma operator? With which control statement comma operator is used?
41. Consider situation when comma operator is used? While evaluating expression containing comma operator which operand will determine type and value of entire expression. Expalin with example.
42. What is precedence of comma operator as compared to other C operator?
43. What is the purpose of Goto statement?How the associated target statement can be identified?
44. Discuss the syntactic rules to be followed while using go to statement? Are there any restrictions that apply where control can be transferred in a C program Why the use of go to statement discouraged Explain with e.g.
45. Compare the syntax associated with statement label and case label.
46. Explain the output of following statement:

If (abs(z) < zmin ) ) z= (z>0)? Zmin:-zmin;
Can we use switch statement be used in this instance?

45. Explain all compound statement that appear in the following program:
sum = 0;
do
{
scanf(“%d”,&i);
if(i<0) {
i=-I;
++fag;
}
sum=sum+I;
} while (i!=0);

47. Using each of the following control statements perform the tasks written below
1. While statement
2. do-while statement
3. For statement

a. Calculate sum of every third integer starting from i-3 for all values of i <100
b. Take value of i and n from the user and print the series

i,i\*n,i\*2n,i\*3n ……
c. Write a loop that will take 10 characters from the user interactively and output their ascii value.
48. Write a switch statement that will examine the value of a integer value say flag and print one of the following messages depending on value of i
1. Hot, if flag has value 1
2. Warm, if flag has value 2
3. Cold, if flag has value 3
4. Out of range, if flag has any other value

49. Write an appropriate control structure that will take input Temp from the user and Print following messages depending on the value assigned to temp
a. Ice, if value of temp is less than 0
b. Water, if value of temp lies between 0 and 100
c. Steam, if value of temp exceeds 100**

 **50. Describe output generated by following C programs:
1. #include
main()
{
int i=0,x=0;

while (i<20) {
if (i% 5==0) {
x+=i;
printf(“%d”,x);
}
++i;
}
printf(“ = %d”,x);
}

2. #include
main()
{
int i=0,x=0;
do {

if(i%5==0) {
x++;
printf(“%d”,x);
}
++i;
} while (i<20);
printf(“ x= %d”,x);
}

51. Identify error if any in the following declarations Satements:
1. int count(100);
2. float value[5,15]
3. float avg[row],[column];
4. char name[30];
5. int sum[];
Identify error if any in following initialization statements?

52. Assume arrays a and b declared as follows:
int a[5][4];
float b[4];
Find errors if any in the following program segment?
a. for(i=1;i<=5;i++)
for(j=1;j<=4;j++)
a[i]][j]=0;

b. for(i=1;i<4;i++)
scanf(“%f”,b[i]);

c. for(i=0;i<=4;i++)
b[i] =b[i]+i;

d. for(i=4;i>=0;i--)
for(j=0;j<4;j++)
a[i][j] =[j] + 1.0;

53. Describe the array defined in each of the following statement
a. char name[25];
b. flat d[5];
c. # define R 60

……………..

int a[R]
d. int mat[5][5]
e. # define A 60
# define B 60

……………………………
char Mem[A][B]

f. double accounts[40][50][60];
Describe array defined in each of the following statements

float c[6] = { 2.0,5.0,3.0,-4.0,2.0,12.0,0.0,8.0};

int b[6] ={ 2,4,5,6};

int y[12] = {0,0,7,0,0,6};

char flag[4] ={‘t’,’r’,’u’,y’}

char f[] = true;

int p[2][4] ={1,3,5,7};
int f[2][4]={1,1,3,3,5,5,7,7};

int g[2][4] = {

{ 1,3,5,7},
{2,4,6,8}
};

k) int f[2][4] ={

{1,3},
{5,7}
};

54. In each of the following situations write definitions and declaration required to transfer the variables and arrays from main to a function called Trial. In each case assign the return value to a floating point variable f.

a. Transfer 2 – floating point variable a,b and 1-dim, 10 –element array “Name“ to a function
b. Transfer int var n,char var c and 1-dim 20 ele int array “N” values

55. What will be the output of the following program segments?

a. main()
{ int a,b=0;
int c[10] ={ 1,2,3,4,5,6,7,8,9,0}

for(a=0;a<10;++a)

if((c[a]%2)==0) b+=c[a];

printf(“%d”,b);

}
b. Main()
{
int a,b =0;
int c[10]={1,2,3,4,5,6,7,8,9,0};
for(a=0;a<10:++a)
b+=c[a];

pritf(“%d”,b);

}

56. How does array differ from ordinary variable? How does their definition differ from that of an ordinary variable?
57. What are the conditions that need to satisfy by all the elements of an error?
58. How is individual element identified in array explained with eg?
59. What do you understand by subscript? What are the restrictions that are applicable to the values that can be assigned to the subscript?
60. “Array size can e specified using a symbolic constant” What is the advantage of using a symbolic constant?
61. What is the value automatically assigned to the array element that are not explicitly initialized?
62. What is the extra character added to the end of array when an array of unspecified
length is assigned a value?
63. What are array declaration how they differ from array definitions?
64. How are array processing done in C. Explain with example? Can array be process
with a single statement?
65. How array can be passed to function? Explain elaborating following points with
Example:
66. How argument is written and how corresponding argument is written in the function?
67. How is array name written when it is passed to function? What do you understand by Dimensions of an array? How is a multi dimensional array defined?
68. What are the rules that define the order in which values are assigned to multi
dimensional array elements?
69. How can be string represented by an array?
70. Discuss the following function giving example of their implementation

1. strcmp()
2. strlen()
3. strcpy()

71. What do you understand by Function? State three advantages of using Functions?
72. What do you mean by function call? From what part of the program can function be
called?
73. What is the purpose of return statement? Does every function need to have an return
Statement?
74. What are formal arguments? What are actual arguments? What is the relationship between formal and actual arguments?
75. What is the purpose of using void keyword? When is this keyword used?
76. Can a function be called from more than one place in a program?
77. What is function prototype? What is their purpose? Where with in a program are function protypes normally placed?
78. What are difference between passing an array to a function and passing single valued data item to a function?
79. What is recursion? What is advantage of using it?
80. Explain meaning of each of the following function prototypes
a. int f(int a);
b. double f(double a, int b)
c. void f(long a .short b,unsigned c);
d. char f(void);

81. Write appropriate function call for each of the statement:

a. float form(float x)
{
float z;
z= 3\* x +1;
return(z);
}

b. void displ(int a,int b)
{
int c;
c=sqrt(a\*a + b\*b);
printc(“c=%i”,c);
}

82. Explain following statement:
1. Float f(float a,float b)
2. long f(long a)
3. void v(int a)
4. char v(void)

83. Suppose function f1 calls function f2. Does order of function definition make any difference?
84. What is a structure? How does a structure differ from an array?
85. What is a structure member? What is relationship between structure member and a structure.
86. Can a structure variable be defined as member of another structure? Explain with eg.
87. Can array be included as member of a structure? Explain with example.
88. How members of a structure are assigned initial values? Explain with example
89. How is array of structure initialized?
90. How can a structure member be accessed? Explain with example.
91. What is the precedence of a period (.) operator? What is its associativity?
92. Can period operator be used with array structure?Explain
93. How can size of a structure determined?
94. Define a structure that contains following three members:
a. Integer quantity Age
b. Float Height
c. Float weight
Include user –defined data type record with in definition
95. Define a structure that contains following two members:
a. 40 element character array called name
b. Mks in eng
c. Mks in hindi
d. Mks in maths
Declare a array of 50 having this structure.
96. Describe the basic input/output functions?
97. What do you understand by control string in scanf function? Describe the elements of control string in detail
98. WAP to check whether given string is palindrome or not?
99. What do you understand by pre-processor staments? Explain them in detail?
100. What is a compiler? What is its role in any programming language?
101. Write appropriate array definition for each of the following problem situations:
1. Define a 1- dim array,10 element array named numbers assign values to
them at the time of declaration
2. Define 1-dim array called direction. Assign the string “south” to it and end the string with a null character.
3. Define 2-dim 3X4 integer array called n. Assign value to the following array element:
10 12 14 16
20 24 26 28
30 32 34 36**

|  |  |
| --- | --- |
|  |  |