1. Write a program to compute the roots of a quadratic equation =0 use following conditions.
   * 1. There is only one root, if a =0 (x = -c/b).
     2. There are no real roots, if -4ac is negative.
     3. If -4ac is positive there are two roots

SOLUTION:

#include<stdio.h>

#include<math.h>

int main()

{

int a,b,c;

double x1,x2,x,d;

printf("Input the co-efficients a,b,c values of equation ax^2+bx+c=0\n");

scanf("%d %d %d",&a,&b,&c);

d= b\*b-4\*a\*c;

if(d>0)

{

printf("two values of x\n");

x1= (-b+sqrt(d))/(2\*a);

x2= (-b-sqrt(d))/(2\*a);

printf("x1= %.2lf\t x2= %.2lf\n",x1,x2);

}

else if(a==0)

{

printf("One solution\n");

x= -c/b;

printf("x= %.2lf",x);

}

else

printf("Imaginary Solution");

return 0;

}

1. Given a mark ranging from 0 to 100, write a program to find the grade using **switch** statement.

#include<stdio.h>

int main()

{

int marks;

printf("\nEnter The Marks Between 0 To 100:");

scanf("%d", &marks);

if(marks>100 || marks<0)

{

printf("\nInvalid Mark\n");

}

else

{

switch(marks/10)

{

case 10 :

case 9 :

printf("\nYour Grade Is: A+ or Excellent\n");

break;

case 8 :

case 7 :

printf("\nYour Grade Is: A or Very Good\n" );

break;

case 6 :

printf("\nYour Grade Is: B or Fair\n" );

break;

case 5 :

case 4 :

printf("\nYour Grade Is: C or Pass\n86");

break;

default :

printf("\nYou Grade Is: F or Fail\n");

}

}

return 0;

}

1. Write a program that can say the name of weekdays by receiving 1 to 7. Using
   * 1. If-else statement, and
     2. Switch Statement
2. if-else Solution:

#include<stdio.h>

int main()

{

int input;

printf("The days of week Starts with Saturday. Enter from 1 to 7:\t");

scanf("%d", &input);

if(input==1)

printf("Saturday\n");

else if(input==2)

printf("Sunday\n");

else if(input==3)

printf("Monday\n");

else if(input==4)

printf("Tuesday\n");

else if(input==5)

printf("Wednesday\n");

else if(input==6)

printf("Thursday\n");

else if(input==7)

printf("Friday\n");

else

printf("Wrong input\n");

return 0;

}

1. Switch Statement

#include<stdio.h>

int main()

{

int input;

printf("The days of week Starts with Saturday.\nEnter from 1 to 7:\t");

scanf("%d", &input);

switch(input)

{

case 1:

printf("Saturday\n");

break;

case 2:

printf("Sunday\n");

break;

case 3:

printf("Monday\n");

break;

case 4:

printf("Tuesday\n");

break;

case 5:

printf("Wednesday\n");

break;

case 6:

printf("Thursday\n");

break;

case 7:

printf("Friday\n");

break;

default:

printf("Wrong input\n");

break;

}

return 0;

}

1. Write a program to check the Leap Year in C

#include <stdio.h>

int main()

{

int year;

printf("Enter a year to check if it is a leap year\n");

scanf("%d", &year);

if (year%400==0 ||( year%4==0 && year%100!=0) )

printf("%d is a leap year.\n", year);

else

printf("%d isn't a leap year.\n", year);

return 0;

}

1. Write a program that convert temperature to from Fahrenheit to Celsius

#include <stdio.h>

int main()

{

float C,F;

printf("Enter Temperature in Fahrenheit:\t");

scanf("%f", &F);

C=((F-32)\*5)/9;

printf("The temperature in Celsius Scale %.2f\n", C);

return 0;

}

1. Write a program to check vowel and consonant using **switch case** statement.

#include <stdio.h>

int main()

{

char cha;

printf("\nEnter an Alphabet to check if it's Vowel or Consonant: ");

scanf("%c",&cha);

if(cha<=65 || cha>=122)

{

printf("Enter Alphabet not other characters\n");

}

else

{

switch(cha)

{

case 'a':

case 'e':

case 'i':

case 'o':

case 'u':

case 'A':

case 'E':

case 'I':

case 'O':

case 'U':

printf("%c is a Vowel\n",cha);

break;

default:

printf("%c is a Constant\n",cha);

break;

}

}

return 0;

}

1. Swapping between two numbers using a temporary variable

#include<stdio.h>

int main()

{

int a, b, temp;

printf("Enter value of a:\t");

scanf("%d",&a);

printf("Enter value of b:\t");

scanf("%d",&b);

printf("Before Swapping:\n");

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

printf(" b = %d\n",b);

temp=a;

a=b;

b=temp;

printf("After Swapping:\n");

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

printf(" b = %d\n",b);

return 0;

}

1. Write C program to find Factorial

#include <stdio.h>

  int main(){

  int c, n, fact = 1;

  printf("Enter a number to calculate its factorial**\n**");

  scanf("%d", &n);

  for (c = 1; c <= n; c++)

    fact = fact \* c;

  printf("Factorial of %d = %d**\n**", n, fact);

 return 0;

}

1. Write C program to find Factorial of a number using **recursion**.

#include<stdio.h>

int fibo(int);

int main()

{

int n,i;

printf("Enter the limit:\n");

scanf("%d",&n);

printf("The Fibonacci Series\n");

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

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

return 0;

}

int fibo(int x)

{

if(x==0 ||x==1)

return x;

else

return(fibo(x-2)+fibo(x-1));

}

1. Given a number, write a program using while loop to reverse the digits of the number

#include<stdio.h>

int main()

{

int num, rev;

printf("Enter a number to reverse it:\t");

scanf("%d", &num);

rev=0;

while(num !=0)

{

rev=rev\*10;

rev=rev + num%10;

num=num/10;

}

printf("\n Reversed value= %d\n", rev);

return 0;

}

1. Palindrome Number Program in C using string functions

#include <stdio.h>

#include <string.h>

int main()

{

char a[100], b[100];

printf("Enter a string to check if it is a palindrome\n");

gets(a);

strcpy(b, a); // Copying input string

strrev(b); // Reversing the string

if (strcmp(a, b) == 0) // Comparing input string with the reverse string

printf("The string is a palindrome.\n");

else

printf("The string isn't a palindrome.\n");

return 0;

}

1. C program for palindrome without using string functions

#include <stdio.h>

int main()

{

int n, r = 0, t;

printf("Enter an integer to check if it is palindrome or not\n");

scanf("%d", &n);

t = n;

while (t != 0)

{

r = r \* 10;

r = r + t%10;

t = t/10;

}

if (n == r)

printf("%d is a palindrome number.\n", n);

else

printf("%d isn't a palindrome number.\n", n);

return 0;

}

14. Program to Calculate 1 + 2 + 3 + 4 + 5 + ... + n series (sum of any types of series)

#include<stdio.h>

int main()

{

int i,n,sum=0;

printf("Enter limit: ");

scanf("%d",&n);

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

sum=sum+i;

printf("\nSum from 1 up to %d is %d\n", n, sum);

return 0;

}

15.Write a program that will read a positive integer determine and print its binary equivalent

#include <stdio.h>

int binary\_conversion(int);

int main()

{

int num, bin;

printf("Enter a decimal number: ");

scanf("%d", &num);

bin = binary\_conversion(num);

printf("The binary equivalent of %d is %d\n", num, bin);

}

int binary\_conversion(int num)

{

if (num == 0)

{

return 0;

}

else

{

return (num % 2) + 10 \* binary\_conversion(num / 2);

}

}

16. Write a program that finds maximum and minimum between two numbers. If the number is equal it gives a message “Equal”.

#include<stdio.h>

int main()

{

long int a,b;

printf("Enter two numbers which u want to compare\n");

scanf("%d %d",&a,&b);

if(a>b)

printf("\n%d is Larger\n",a);

else if(a<b)

printf("\n%d is Larger\n",b);

else

printf("\nBoth are Equal\n");

return 0;

}

17.Write a program that takes a number from keyboard and finds whether the number is positive, negative or zero.

#include<stdio.h>

int main()

{

int input;

printf("Enter a number to check\t");

scanf("%d",&input);

if(input>0)

printf("Positive number\n");

else if(input<0)

printf("Negative number\n");

else

printf("Zero\n");

return 0;

}

18. Write a program that takes a number from keyboard and prints ʻY’ if the number is greater than or equal 30 and not equal to 50. Otherwise it prints ‘No’.

#include<stdio.h>

int main()

{

int in;

printf("Enter a number: ");

scanf("%d",&in);

if(in>=30 && in!=50)

printf("Y\n");

else

printf("N\n");

return 0;

}

19. Write a program to check EVEN and ODD number using **array**.

#include<stdio.h>

int main()

{

int i,array[100],N;

printf("Enter Size of array:\n");

scanf("%d",&N);

printf("\nEnter array elements:\n");

for(i=0;i<N;i++)

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

for(i=0;i<N;i++)

{

if(array[i]%2==0)

printf("%d Even\n",array[i]);

else

printf("%d Odd \n",array[i]);

}

return 0;

}

20.Write a program to check Prime and Non-prime number using **array**

#include <stdio.h>

int main()

{

int a[100],n,i,j,c=0;

printf("enter the number= ");

scanf("%d",&n);

printf("enter the elements = \n");

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

{

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

}

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

{

for(j=1; j<=a[i]; j++)

{

if(a[i]%j==0)

c++;

}

if(c==2)

printf("%d is prime\n",a[i]);

else

printf("%d is non-prime\n",a[i]);

c=0;

}

return 0;

}

1. Print numbers from 1 to 10 using goto statement without any loop

#include<stdio.h>

int main()

{

int number=1;

repeat:

printf("%d\n", number);

number++;

if(number<=10)

goto repeat;

return 0;

}

1. Write a C program to multiply/addition two **matrixes**

#include <stdio.h>

int main()

{

int a[10][10], b[10][10], mult[10][10], r1, c1, r2, c2, i, j, k;

printf("Enter rows and column for first matrix:\n ");

scanf("%d %d", &r1, &c1);

printf("Enter rows and column for second matrix:\n ");

scanf("%d %d",&r2, &c2);

while (c1!=r2)

{

printf(" Error! column of first matrix not equal to row of second.\n");

printf("Enter rows and column for first matrix: ");

scanf("%d %d", &r1, &c1);

printf("Enter rows and column for second matrix: ");

scanf("%d %d",&r2, &c2);

}

printf("\nEnter elements of matrix 1:\n");

for(i=0; i<r1; ++i)

{

for(j=0; j<c1; ++j)

{

printf("Enter elements a%d%d: ",i+1,j+1);

scanf("%d", &a[i][j]);

}

}

printf("\nEnter elements of matrix 2:\n");

for(i=0; i<r2; ++i)

{ for(j=0; j<c2; ++j)

{

printf("Enter elements b%d%d: ",i+1,j+1);

scanf("%d", &b[i][j]);

}

}

for(i=0; i<r1; ++i)

{

for(j=0; j<c2; ++j)

{

mult[i][j]=0;

for(k=0; k<c1; ++k)

{

mult[i][j]+=a[i][k]\*b[k][j];

}

}

}

printf("\nOutput Matrix:\n");

for(i=0; i<r1; ++i)

{

for(j=0; j<c2; ++j)

printf("%d ",mult[i][j]);

printf("\n");

}

return 0;

}

23. Write a C program to Insert a new element in a specific position in an array where position & new element given through the keyboard

#include <stdio.h>

int main()

{

int array[100], position, c, n, value;

printf("Enter number of elements in array\n");

scanf("%d", &n);

printf("Enter %d elements\n", n);

for (c = 0; c < n; c++)

scanf("%d", &array[c]);

printf("Enter the location where you wish to insert an element\n");

scanf("%d", &position);

printf("Enter the value to insert\n");

scanf("%d", &value);

for (c = n - 1; c >= position - 1; c--)

array[c+1] = array[c];

array[position-1] = value;

printf("Resultant array is\n");

for (c = 0; c <= n; c++)

printf("%d\n", array[c]);

return 0;

}

1. Write a C program to sort an array by using **bubble sort** method.

#include <stdio.h>

int main()

{

int array[100], n, c, d, swap;

printf("Enter number of elements\n");

scanf("%d", &n);

printf("Enter %d integers\n", n);

for (c = 0; c < n; c++)

scanf("%d", &array[c]);

for (c = 0 ; c < n - 1; c++)

{

for (d = 0 ; d < n - c - 1; d++)

{

if (array[d] > array[d+1]) /\* For decreasing order use < \*/

{

swap = array[d];

array[d] = array[d+1];

array[d+1] = swap;

}

}

}

printf("Sorted list in ascending order:\n");

for (c = 0; c < n; c++)

printf("%d\n", array[c]);

return 0;

}

1. Search a specific number of an array element and say its position if it is found using binary search

#include <stdio.h>

int binary\_search();

int sort(int b[],int n);

int a[50], n, item, loc, beg, mid, end, i;

int main()

{

printf("\nEnter number of elements of array: ");

scanf("%d", &n);

printf("\nEnter elements of an array :\n");

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

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

printf("\n Array sorted form:\n");

sort(a,n);

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

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

printf("\nEnter ITEM to be searched: ");

scanf("%d", &item);

binary\_search();

return 0;

}

int sort(int b[],int n)

{

int i,j,x,temp;

x=n;

for(i=0;i<n-1;i++)

{

for(j=0;j<n-i-1;j++)

{

if(b[j]>b[j+1])

{

temp=b[j];

b[j]=b[j+1];

b[j+1]=temp;

}

}

}

}

int binary\_search()

{

beg = 0;

end = n-1;

mid = (beg + end) / 2;

while ((beg<=end) && (a[mid]!=item))

{

if (item < a[mid])

end = mid - 1;

else

beg = mid + 1;

mid = (beg + end) / 2;

}

if (a[mid] == item)

printf("\n\nITEM found at location %d", mid+1);

else

printf("\n\nITEM doesn't exist");

}

1. Implementation of Stack Using Array in C

#include<stdio.h>

int stack[100],choice,n,top,x,i;

void push(void);

void pop(void);

void display(void);

int main()

{

top=-1;

printf("\n Enter the size of STACK[MAX=100]:");

scanf("%d",&n);

printf("\n\t STACK OPERATIONS USING ARRAY");

printf("\n\t--------------------------------");

printf("\n\t 1.PUSH\n\t 2.POP\n\t 3.DISPLAY\n\t 4.EXIT");

do

{

printf("\n Enter the Choice:");

scanf("%d",&choice);

switch(choice)

{

case 1:

{

push();

break;

}

case 2:

{

pop();

break;

}

case 3:

{

display();

break;

}

case 4:

{

printf("\n\t EXIT POINT ");

break;

}

default:

{

printf ("\n\t Please Enter a Valid Choice(1/2/3/4)");

}

}

}

while(choice!=4);

return 0;

}

void push()

{

if(top>=n-1)

{

printf("\n\tSTACK is over flow");

}

else

{

printf(" Enter a value to be pushed:");

scanf("%d",&x);

top++;

stack[top]=x;

}

}

void pop()

{

if(top<=-1)

{

printf("\n\t Stack is under flow");

}

else

{

printf("\n\t The popped elements is %d",stack[top]);

top--;

}

}

void display()

{

if(top>=0)

{

printf("\n The elements in STACK \n");

for(i=top; i>=0; i--)

printf("\n%d",stack[i]);

printf("\n Press Next Choice");

}

else

{

printf("\n The STACK is empty");

}

}

1. Copy string in C without using strcpy () function

#include <stdio.h>

int main()

{

int c = 0;

char s[1000], d[1000] = "What can I say about my programming skills?";

printf("Before copying, the string: %s\n", d);

printf("Input a string to copy\n");

gets(s);

while (s[c] != '\0')

{

d[c] = s[c];

c++;

}

d[c] = '\0';

printf("After copying, the string: %s\n", d);

return 0;

}

1. Given a string from the keyboard. Write a program to calculate the length of a string

#include <stdio.h>

#include <string.h>

int main()

{

char str[100];

printf("Enter a string:\n");

str[]=getch();

printf("Length of your name: %d", strlen(str));

return 0;

}

1. C Program to Count All Occurrence of a Character in a String.

#include<stdio.h>

#include<string.h>

int main()

{

char string[100],cha;

int i,count=0;

printf("Enter your string:\t ");

gets(string);

printf("Enter character you want to search: ");

cha=getchar();

for(i=0;i<strlen(string);i++)

{

if(string[i]==cha)

{

count++;

}

}

printf("%c occurs %d times in the given string\n",cha,count);

return 0;

}

1. C Program To Count the Occurrence of a Substring in String

#include <stdio.h>

#include <string.h>

char str[100], sub[100];

int count = 0, count1 = 0;

int main()

{

int i, j, l, l1, l2;

printf("\nEnter a string : ");

gets(str);

l1 = strlen(str);

printf("\nEnter a substring : ");

gets(sub);

l2 = strlen(sub);

for (i = 0; i < l1;)

{

j = 0;

count = 0;

while ((str[i] == sub[j]))

{

count++;

i++;

j++;

}

if (count == l2)

{

count1++;

count = 0;

}

else

i++;

}

printf("%s occurs %d times in %s", sub, count1, str);

return 0;

}

1. Given two integer numbers are we have to swap their values using pointers in C language.

#include <stdio.h>

// function : swap two numbers using pointers

void swap(int \*a,int \*b)

{

int t;

t = \*a;

\*a = \*b;

\*b = t;

}

int main()

{

int num1,num2;

printf("Enter value of num1: ");

scanf("%d",&num1);

printf("Enter value of num2: ");

scanf("%d",&num2);

//print values before swapping

printf("Before Swapping: num1=%d, num2=%d\n",num1,num2);

//call function by passing addresses of num1 and num2

swap(&num1,&num2);

//print values after swapping

printf("After Swapping: num1=%d, num2=%d\n",num1,num2);

return 0;

}

1. **Store Student Information and Display it Using Structure**

#include<stdio.h>

struct student {

char name[50];

int roll;

float marks;

} s;

int main()

{

printf("Enter information:\n");

printf("Enter name: ");

scanf("%s", s.name);

printf("Enter roll number: ");

scanf("%d", &s.roll);

printf("Enter marks: ");

scanf("%f", &s.marks);

printf("Displaying Information:\n");

printf("Name: ");

puts(s.name);

printf("Roll number: %d\n",s.roll);

printf("Marks: %.1f\n", s.marks);

return 0;

}

33. Find Largest Element Using Dynamic Memory Allocation - calloc()

#include <stdio.h>

#include <stdlib.h>

int main()

{

int i, num;

float \*data;

printf("Enter total number of elements(1 to 100): ");

scanf("%d", &num);

// Allocates the memory for 'num' elements.

data = (float\*) calloc(num, sizeof(float));

if(data == NULL)

{

printf("Error!!! memory not allocated.");

exit(0);

}

printf("\n");

// Stores the number entered by the user.

for(i = 0; i < num; ++i)

{

printf("Enter Number %d: ", i + 1);

scanf("%f", data + i);

}

// Loop to store largest number at address data

for(i = 1; i < num; ++i)

{

// Change < to > if you want to find the smallest number

if(\*data < \*(data + i))

\*data = \*(data + i);

}

printf("Largest element = %.2f", \*data);

return 0;

}

1. Demonstrate the Dynamic Memory Allocation for Structure

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

int main()

{

char \*mem\_allocation;

/\* memory is allocated dynamically \*/

mem\_allocation = malloc( 20 \* sizeof(char) );

if( mem\_allocation== NULL )

{

printf("Couldn't able to allocate requested memory\n");

}

else

{

strcpy( mem\_allocation,"Allocation Approved\n");

}

printf("Dynamically allocated memory content : " \

"%s\n", mem\_allocation );

free(mem\_allocation);

}

1. A Simple C Program to open, read and close the file

#include <stdio.h>

int main()

{

char ch;

/\* Pointer for both the file\*/

FILE \*fpr, \*fpw;

/\* Opening file FILE1.C in “r” mode for reading \*/

fpr = fopen("C:\\file1.txt", "r");

/\* Ensure FILE1.C opened successfully\*/

if (fpr == NULL)

{

puts("Input file cannot be opened");

}

/\* Opening file FILE2.C in “w” mode for writing\*/

fpw= fopen("C:\\file2.txt", "w");

/\* Ensure FILE2.C opened successfully\*/

if (fpw == NULL)

{

puts("Output file cannot be opened");

}

/\*Read & Write Logic\*/

while(1)

{

ch = fgetc(fpr);

if (ch==EOF)

break;

else

fputc(ch, fpw);

}

/\* Closing both the files \*/

fclose(fpr);

fclose(fpw);

return 0;

}

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