NAME: SADIKU DAVID JESUFERANMI

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**Assignment on loop**

1. Write a program that count from 100 to 1 varying the control variable in the steps of 3 and printing its square for each count. Using **do** statement and **While** statement.

**Solution**

#include<stdio.h>

int main(){

 int i= 100;

 int square=1000;

 do {

 printf(" \n%d= %d\n ", i,square);

 i = i - 3;

 square= i\*i;

 }while( i <= 100 && i>=0 );

 return 0;

}



1. **Write a C program to display 80 bottles. But, if the input exceed 59, exit the loop and end the program. (Hint: using break statement)**

**Solution**

 #include <stdio.h>

int main () {

 int bottles = 1;

 int limit=59;

while( bottles < 81 ) {

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

 bottles=bottles+1;

if( bottles >= limit) {

 break;

 }

 }

 return 0;

}





1. Write a program that reads an integer and displays a message to indicate whether it is a prime number or not. It is reminded that a prime number is any integer greater than 1 with no divisor other than 1 and itself.

**Solution**

#include <stdio.h>

int main() {

 int n, i, prime = 0;

 printf("Enter a positive integer: ");

 scanf("%d", &n);

for (i = 2; i <= n / 2; ++i) {

 if (n % i == 0) {

 prime = 1;

 break; }

 }

 if (n == 1) {

 printf("1 is neither prime nor composite."); }

 else {

 if (prime == 0)

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

 else

printf("%d is not a prime number.", n);

 printf(" \n\nA prime number is any integer greater than 1 with no divisor other than 1 and itself. "); }

 return 0;

}



1. Write a c program to find factorial of a natural number

Solution

#include <stdio.h>

int main()

{

 int i, Number;

 long Factorial= 1;

 printf("\n Please Enter any number to Find Factorial\n");

 scanf("%d", &Number);

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

 {

 Factorial = Factorial \* i;

 }

 printf("\nFactorial of %d = %d\n", Number, Factorial);

 return 0;

}



1. Write a program in C that count from 50 to 1000 varying the control variable in steps of 7 using **do While** statement.

**Solution**

#include <stdio.h>

int main () {

 int num = 50;

 do {

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

 num = num + 7;

 }while( num <= 1000 );

 return 0;

}





1. Using conditional operator, write a program in C programming Language to find if a given character is a consonant or a vowel.

**Solution**

#include <stdio.h>

int main()

{

 char ch;

 printf("Input a character\n");

 scanf("%c", &ch);

 switch(ch)

 {

 case 'a':

 case 'A':

 case 'e':

 case 'E':

 case 'i':

 case 'I':

 case 'o':

 case 'O':

 case 'u':

 case 'U':

 printf("%c is a vowel.\n", ch);

 break;

 default:

 printf("%c is a consonant.\n", ch);

 }

 return 0;

}



1. Write a program (using FOR statement) that reads an integer and displays its multiplication table. The program should force the user to enter an integer within [1, 10].

**Solution**

#include <stdio.h>

int main() {

 int n, i;

 printf("Enter an integer: ");

 scanf("%d", &n);

 for (i = 1; i <= 10; ++i) {

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

 }

 return 0;

}



1. A test consists of 10 multiple choice questions, each of which has three possible answers. The first answer gets three points, the second one point, and the third two points. Write a program that uses the **switch** statement to read the test taker’s 10 answers and display the final score.

**Solution**

#include <stdio.h>

int main()

{

 int test;

 printf("Input answer of question 1\n");

 scanf("%d", &test);

 printf("Input answer of question 2\n");

 scanf("%d", &test);

 printf("Input answer of question 3\n");

 scanf("%d", &test);

 printf("Input answer of question 4\n");

 scanf("%d", &test);

 printf("Input answer of question 5\n");

 scanf("%d", &test);

 printf("Input answer of question 6\n");

 scanf("%d", &test);

 printf("Input answer of question 7\n");

 scanf("%d", &test);

 printf("Input answer of question 8\n");

 scanf("%d", &test);

 printf("Input answer of question 9\n");

 scanf("%d", &test);

 printf("Input answer of question 10\n");

 scanf("%d", &test);

 switch(test)

 {

 case 1:

 printf("you have 3 points");

 break;

 case 2:

 printf("you have 2 points");

 break;

 case 3:

 printf("you have 1 point");

 break;

 }

 return 0;

}





1. Write a C program to find the product of 8 integers entered by a user. If user enters 0 skip   it. (Hint: *using continue statement*).

**Solution**

#include <stdio.h>

int main()

{

 int n;

 int number,pro;

 printf("\nEnter an integer number :");

 scanf("%d",&n);

 pro=1;

 while(n>0)

 {

 number=n%10;

 pro\*=number;

 n=n/10;

 }

 printf("\nPRODUCT of all digits: %d",pro);

 return 0;

}



1. Write a program that reads the initial population of a country and its annual population growth (as a percentage). Then, the program should read the number of years and display the new population for each year.

**Solution**

#include<stdio.h>

 int main()

{

int count=1,year\_num;

float Rate;

 long currentyear;

 long NextYr;

while (count<=1)

{

 printf("Enter the initial population: ");

 scanf("%d",&currentyear);

 printf("Enter the rate: ");

 scanf("%f",&Rate);

 printf("Year Population\n");

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

 if ((currentyear>0 && currentyear<100000000) && (Rate>0 && Rate<10))

 {

 NextYr = currentyear;

 for(year\_num=0;year\_num<=25;year\_num++)

 {

 NextYr = Rate \* NextYr \* (1-NextYr/100000000);

 printf("%10d%12d\n",year\_num,NextYr);

 }

 break;

 }

 else if ((currentyear < 0 || currentyear > 100000000) || (Rate<0 || Rate>10))

 {

 printf("Invalid Input!");

 printf("Enter the initial egret population: ");

 scanf("%d",&currentyear);

 printf("Enter the rate: ");

 scanf("%f",&Rate);

 if ((currentyear>0 && currentyear<100000000) && (Rate>0 && Rate<10))

 {

 NextYr = currentyear;

 for(year\_num=0;year\_num<=25;year\_num++)

 {

 printf("%10d%12d\n",year\_num,NextYr);

 NextYr = Rate \* NextYr \* (1-NextYr/100000000);

 }

 break;

 }

 else

 {

 printf("No more chance ! Bye ! ");

 }

}

return 0;

}

**}**

****