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MATRIC NO: 18/SCI01/082

**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 {

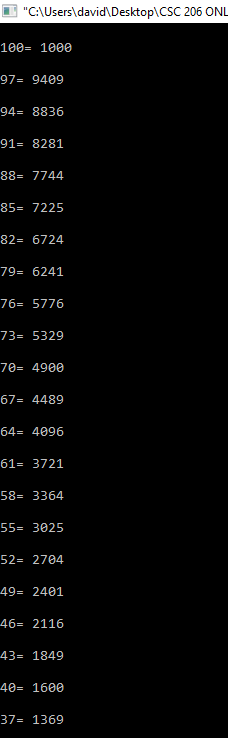
printf(" \n%d= %d\n ", i,square);

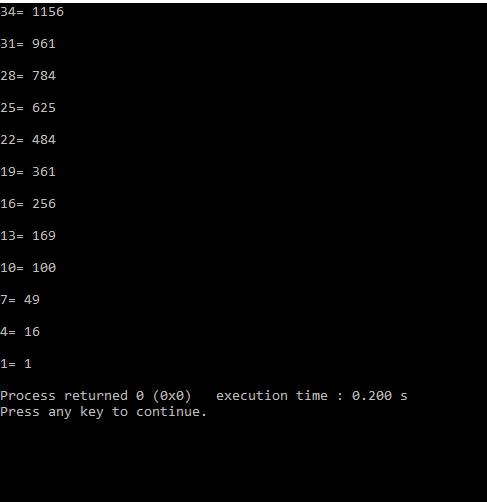
i = i - 3;

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) {

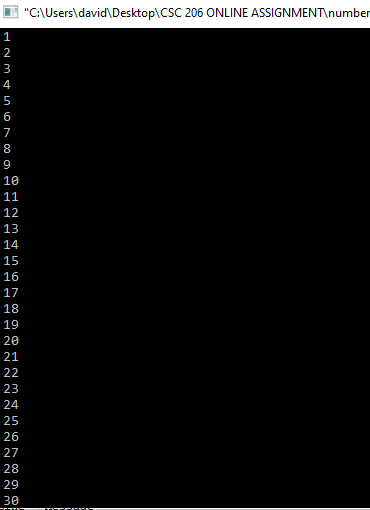
break;

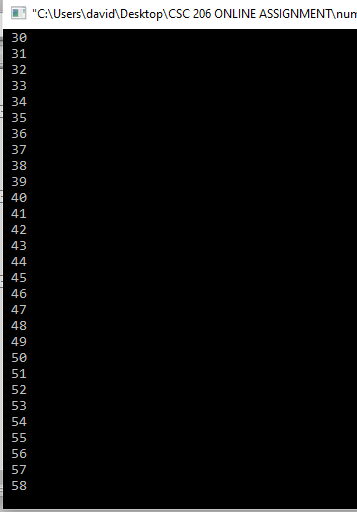
}

}

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);

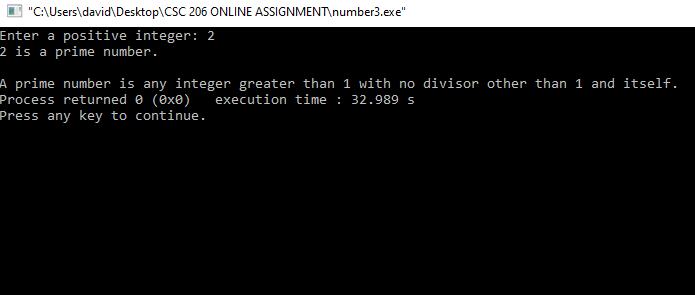
else

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++)

{

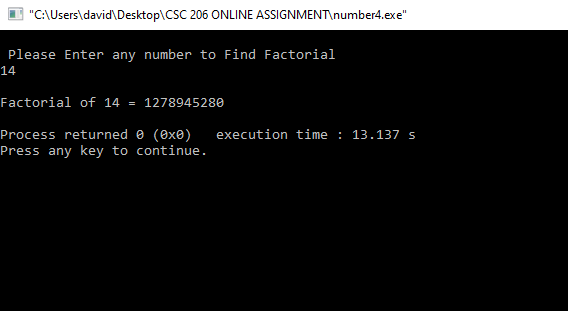
Factorial = Factorial \* i;

}

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 {

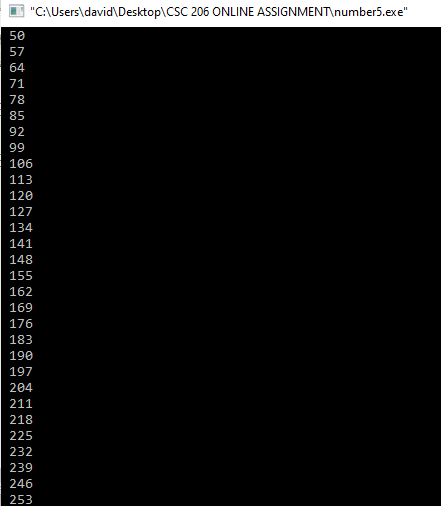
printf(" %d\n", num);

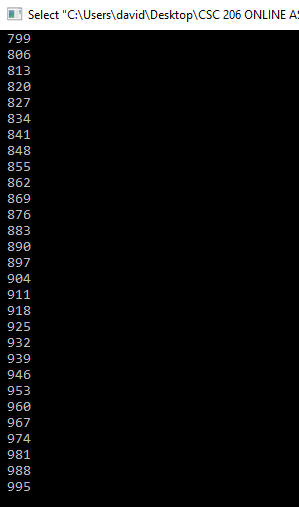
num = num + 7;

}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;

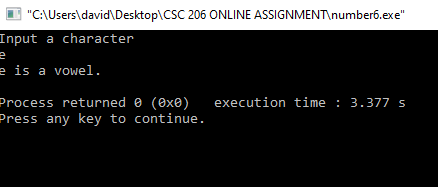
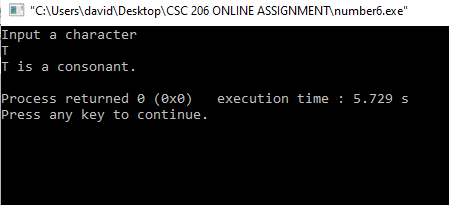
default:

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);

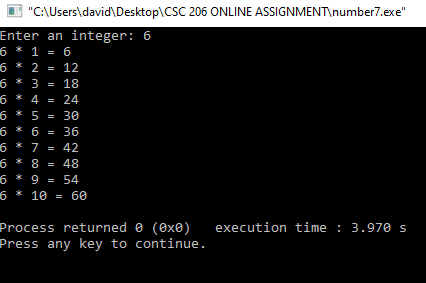
for (i = 1; i <= 10; ++i) {

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:

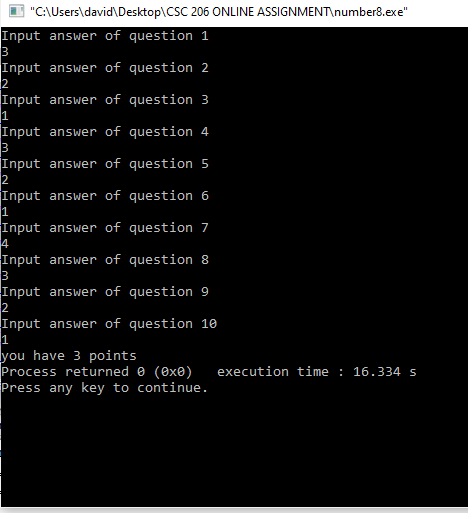
printf("you have 1 point");

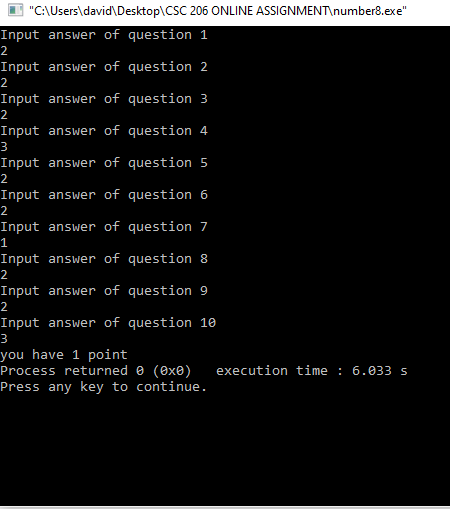
break;

}

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;

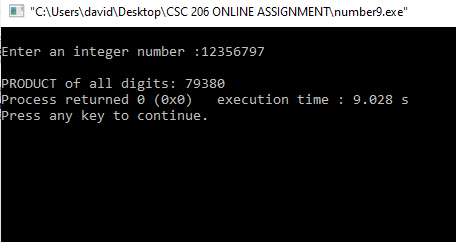
n=n/10;

}

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 ! ");

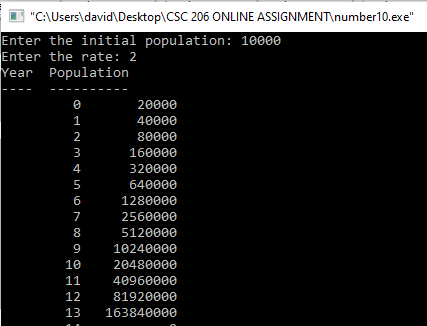
}

}

return 0;

}

**}**

****