Department of Computer Science and Engineering

Amrita School of Engineering, Bengaluru

Topic: Control Structures-Loops

1. Observe the output of the following programs:

1. #include<stdio.h>

int main()

{

float a=5.2;

if(a == 5.2)

{

printf("equal");

}

else

{

printf("not equal");

}

}

NOTE:Float data type doesnt work with == operator , hence the output is **not equal**.

The same way %(modulo operator) also can’t be used with float data type.

2. What will be the output of the following C program?

#include <stdio.h>

Int i=10;

void main()

{

int i =20,n;

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

{

int i=10;

i++;

}

printf("%d", i);

}

3. What will be output of this C snippet?

void main()

{

int i,j=1;

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

{

j=j+1;}

printf("%d %d",i,j);

}

4. Find the output of the c program  
#include <stdio.h>

void main()

{

int i=20,j,k=0;

for(j=1;j >i;j++)

{

k+=j<10?4:3;

}

printf("%d", k);

}

5. Find the output?

#include<stdio.h>

int main()

{

int i = 1, j = 1;

for(--i && j++ ; i<10; i+=2)

{

printf("loop ");

}

return 0;

}

6. Find the output of given program below

#include<stdio.h>

int main()

{

for(5;2;2)

printf("Hello");

return 0;

}

7. Find the output of given program below

#include<stdio.h>

int main()

{

for(5;2;2) ;

printf("Hello");

return 0;

}

8. int main()

{

int x = 3, k;

while (x-- >= 0) {

printf("%d", x);

}

return 0;

}

9. #include <stdio.h>

int main()

{

int c = 5, no = 10;

do {

no /= c;

} while(c--);

printf ("%d\n", no);

return 0;

}

10. int main()

{

int i;

for(i=0;i<5;i++);

{

printf("hello\n");

}

}

NOTE: Semicolon isn't an "operator". It terminates a "statement", and it's valid for the statement to contain nothing.

o/p : hello

11. int main()

{

int i;

for(i=0;i<5;i++)

{

printf("hello\n");

}

}

o/p:

hello

hello

hello

hello

hello

12. Observe the output

int main()

{

int i;

for(;i<5;)

{

printf("hello\n");

}

}

13. Observe the output

int main()

{

int i;

for(i=0;i<5;)

{

printf("hello\n");

}

}

14. Observe the output

int main()

{

int i;

for(; ;i++)

{

printf("hello\n");

}

}

15. **while**

#include<stdio.h>

int main()

{

int n,i=1, sum=0;

printf("enter the value of n\n");

scanf("%d",&n);

while(i<=n) //syntax while(expression){ body of the loop} initilization of the loop variable, condition check, loop variable updation

{

sum=sum+i;

i=i+1;

}

printf("the sum is=%d\n",sum);

}

16. do while

#include<stdio.h>

int main()

{

int n,i=1, sum=0;

printf("enter the value of n\n");

scanf("%d",&n);

do //synatax do{body of the loop} while(condition);

{

sum=sum+i;

i=i+1;

}while(i<=n);

printf("the sum is=%d\n",sum);

}

**Switch case:**

1. Find the output of the following code:

#include <stdio.h>

int main()

{

int i = 0;

switch (i)

{

case '0': printf("Choice is zero");

break;

case '1': printf("Choice is one");

break;

default: printf("Default Choice");

}

return 0;

}

O/P:

2. Switch case with menu options and expression returning integer,and explain various options of cases, case not having content , case having more that one ststemnet etc...

#include<stdio.h>

int main()

{

float a,b,c;

int choice;

printf("1: Addition 2: Sub 3: Mul 4: Div\n");

printf("Enter a\n");

scanf("%f",&a);

printf("Enter b\n");

scanf("%f",&b);

printf("Enter your operator/choice\n");

scanf("%d",&choice);

switch(choice) //syntax: switch(expression/variablename) {case 1, case1......, default}

{

case 1: c=a+b; //syntax: case value1: statements; break;

printf("The result is=%f\n",c);

break;

case 2: c=a-b; //syntax: case value2: statements; break;

printf("The result is=%f\n",c);

break;

case 3: c=a\*b; //syntax: case value3: statements; break;

printf("The result is=%f\n",c);

break;

case 4: c=a/b; //syntax: case value4: statements; break;

printf("The result is=%f\n",c);

break;

default: printf("invalid choice\n"); //syntax: default : statemnets;

}

printf("program is done!!");

}

3. Switch case with menu options and expression returning integer

#include<stdio.h>

int main()

{

int a,b,c;

char op;

//printf("1: Addition 2: Sub 3: Mul 4: Div\n");

printf("Enter a\n");

scanf("%d",&a);

printf("Enter b\n");

scanf("%d",&b);

printf("Enter your operator\n");

scanf(" %c",&op);

switch(op) //syntax: switch(expression/variablename) {case 1, case1......, default}

{

case '+': c=a+b; //syntax: case value1: statements; break;

printf("The result is=%d\n",c);

break;

case '-': c=a-b; //syntax: case value2: statements; break;

printf("The result is=%d\n",c);

break;

case '\*': c=a\*b; //syntax: case value3: statements; break;

printf("The result is=%d\n",c);

break;

case '/': c=a/b; //syntax: case value4: statements; break;

printf("The result is=%d\n",c);

break;

default: printf("invalid choice\n"); //syntax: default : statemnets;

}

printf("program is done!!");

}

3. Find the output of the give program

#include <stdio.h>

int main()

{

int ip = 5;

switch (ip)

{

case 0+1: printf("Blue");

break;

case 1+2: printf("Red");

break;

case 2+3: printf("Green");

break;

default: printf("Yellow");

}

return 0;

}

Break and Continue

1. //This program calculates the sum of a maximum of 5 numbers.

// if the user enters a negative number, the break statement is executed. This will end the for loop, and the sum is displayed.

//he break statement ends the loop immediately when it is encountered. Its syntax is:

//The break statement ends the loop immediately when it is encountered.

#include <stdio.h>

int main() {

int i;

int number, sum = 0;

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

{

printf("Enter a n%d: ", i);

scanf("%d", &number);

// if the user enters a negative number, break the loop

if (number < 0) {

break;

}

sum += number; // sum = sum + number;

}

printf("Sum = %d", sum);

}

2. #include<stdio.h>

int main()

{

int i;

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

{

if(i==5)

{

continue; //skips the current iteration and continue with next iteration

}

//break;

printf("%d\t", i); //1 2 3 4 break

// 1 2 3 4 6 7 8 9 10 continue

}

}

Practice questions:

1. Write a C program to find roots of a quadratic equation using switch case.
2. Write a C program that prints a triangle of stars. Print 1 star in row 0, 3 stars in row 1, 5 stars in row 2, and so on using loops.Print if a given number is an Armstrong number or not.
3. Print factorial of all the numbers between a given range.
4. Print the Fibonacci series upto n.
5. Print the Fibonacci series upto n terms.
6. Program to swap the first and the last digit of a given number.
7. Print the product of all the numbers entered by the user, until the user enters any value divisible by 5.
8. Print all the prime numbers between a given range.
9. Print multiplication table for all the numbers between a given range.
10. Print the sum of the following series upto n terms 1/1! + 2/2! + ……. + n/n!.
11. Print the sum of the following series upto n terms 1/1! + 22/2! +……….. + nn/n!.