**Control Statements**

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## If/Else Statements

if (condition)  
{  
 run code;  
}  
else if (condition)  
{  
 if (condition)  
 {  
 run code; *// nested if/else statement* }  
}  
else  
{  
 run code;  
}

C

### Dangling else

* An else statement cannot exist without an if statement
* Any extra else statements are called dangling elses

Dangling elses cause compilation errors

## Switch Statements

int a;  
scanf("%d", a);  
switch (a)  
{  
 case 5 *// is a == 5?* run code;  
 case 7  
 run code;  
 default *// if none of the cases match, run this* run code;  
}

C

Switch statements can be used to check characters as well.

Multiple conditions can also be checked, but it becomes messy.

## Labels

goto label1  
 code; *// this code is skipped*label1  
 code;

C

Labels are used in assembly languages. It is not recommended for use elsewhere.

## Loops

### While loops

int a = 0;  
while (a++ < 10)  
{  
 printf("%d", a);  
}

C

While loops can cause infinite loops.

Using the statement continue will cause current loop run to stop and start the next run.

Using the statement break will cause the while loop to stop. Any upcoming runs will be skipped.

### Do-while loops

do  
{  
 run code; *// executed at least once*} while (condition) *// condition is checked before repeating*

C

Otherwise, do while loops are exactly the same as while loops.

### For loops

for (int a = 0; a < 10; a++)  
{  
 run code;  
}

C

Here, int a = 0 is the initialization, a < 10 is the terminating condition and a++ is the increment (or decrement if needed) statement.

Setting no terminating condition will cause an infinite loop.

In general, all loops can be nested.

Note: a++ will execute the code, and then increment a while ++a will increment a and then execute the code.