

Control Structures in C

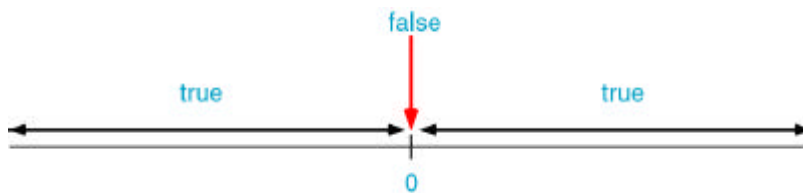
Comp 1002/1402

Overview

- Logic & Logical Operators
- Selection Mechanisms
 - **(if elseif else switch)**
- Loop Mechanisms

Logical Data

- In C the boolean type doesn't exist.
 - 0 is false
 - Everything else is true



Logical Operators

not

x	!x
false	true
true	false

logical

!

x	!x
zero	1
nonzero	0

C Language

and

x	y	x&y
false	false	false
false	true	false
true	false	false
true	true	true

logical

&&

x	y	x&y
zero	zero	0
zero	nonzero	0
nonzero	zero	0
nonzero	nonzero	1

C Language

or

x	y	x y
false	false	false
false	true	true
true	false	true
true	true	true

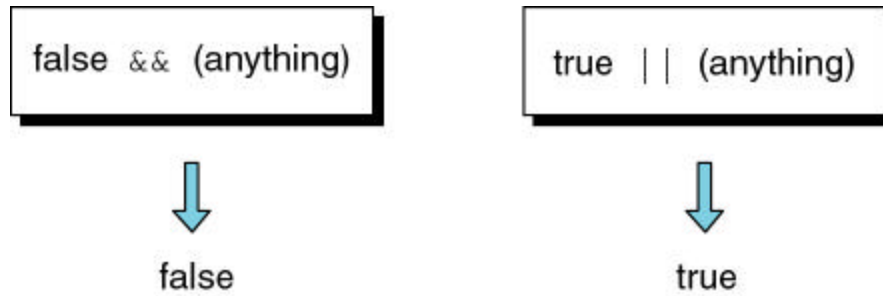
logical

||

x	y	x y
zero	zero	0
zero	nonzero	1
nonzero	zero	1
nonzero	nonzero	1

C Language

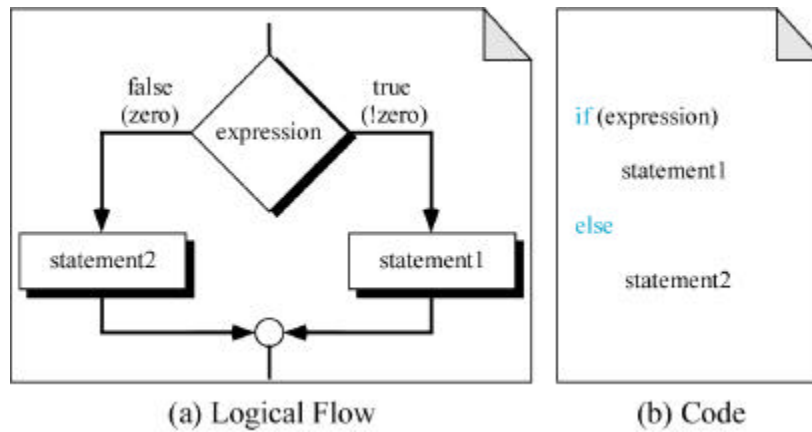
Operators “Short Circuit”



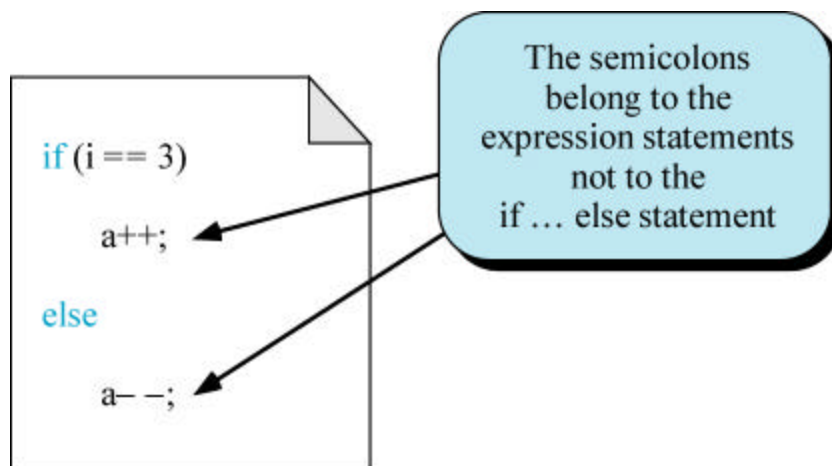
Relational Operators

Operator	Meaning	Precedence
<	less than	10
<=	less than or equal	
>	greater than	
>=	greater than or equal	
==	equal	9
!=	not equal	

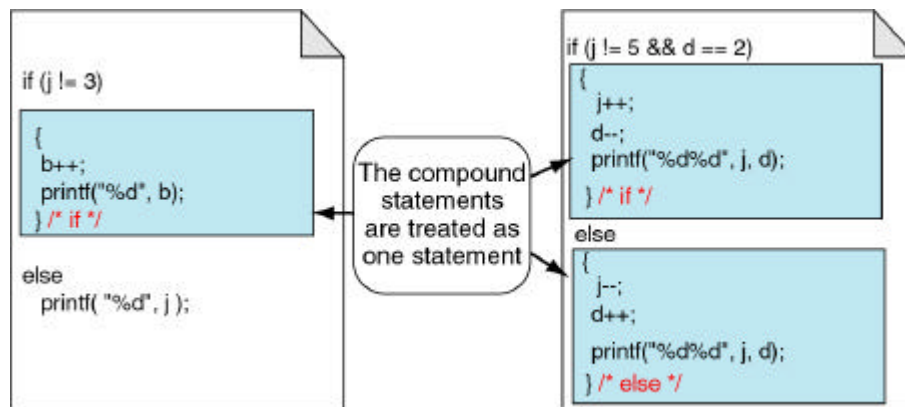
if else



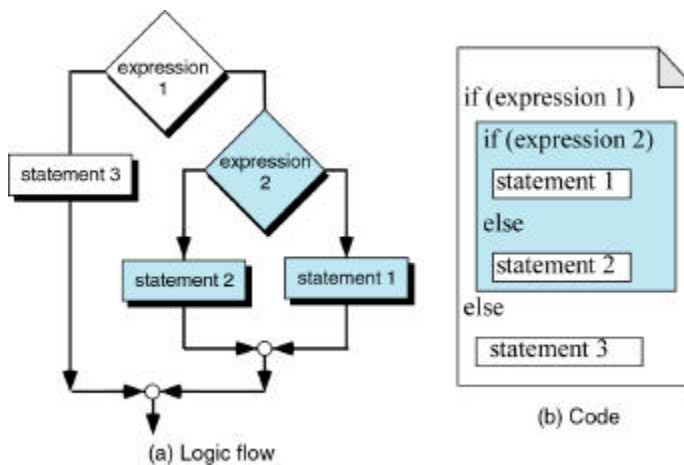
if else



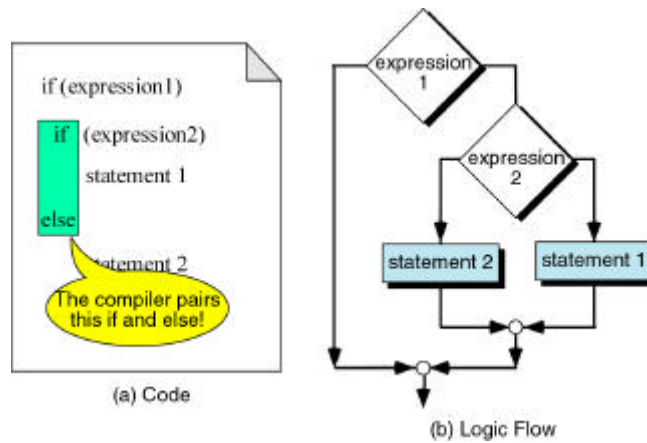
if else



Nested if else



Dangling **else**



Stopping due to Errors

void exit(int status);

Exits program with buffers fully flushed

Returns code for exit

e.g.: **exit(0);**

void abort(void);

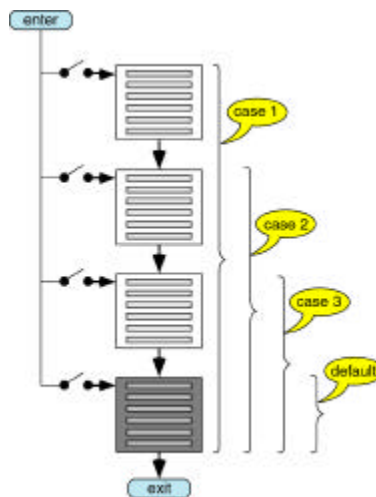
Exits without any cleanup

eg: **abort();**

switch

```
switch (expression)
{
    case constant-1: statement
        ...
        statement
    case constant-2: statement
        ...
        statement
    case constant-n: statement
        ...
        statement
    default : statement
        ...
        statement
} /* end switch */
```

switch



switch

```
/* program fragment to demo switch*/

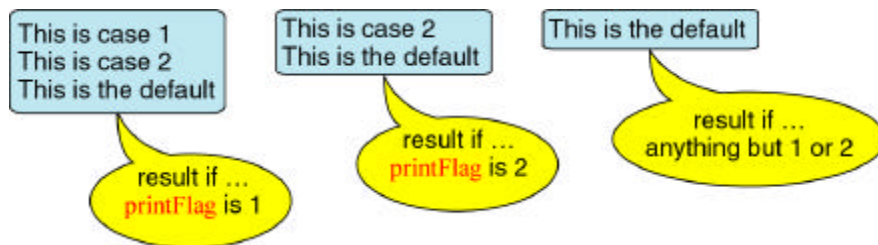
switch (printf(flag)
{
    case 1:  printf("this is case 1\n");

    case 2:  printf("this is case 2\n");

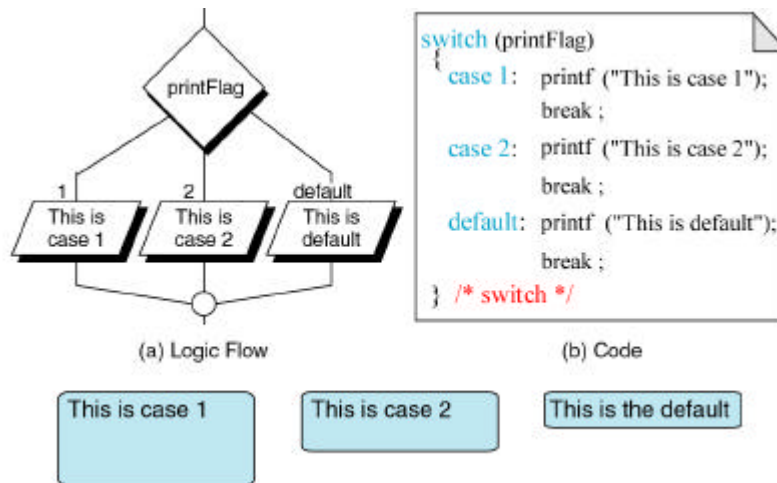
    default: printf("this is default\n");

} /* switch */
```

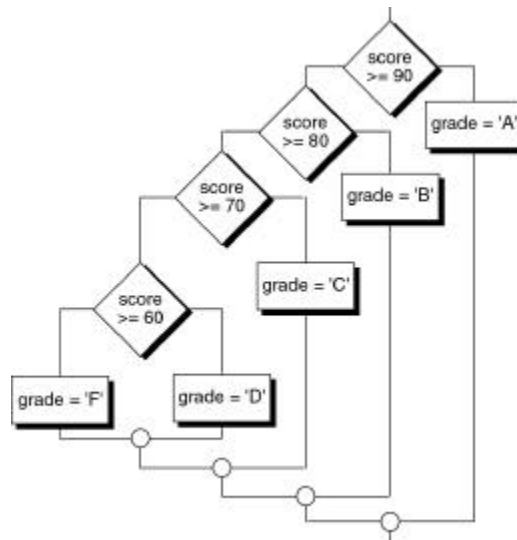
switch



switch



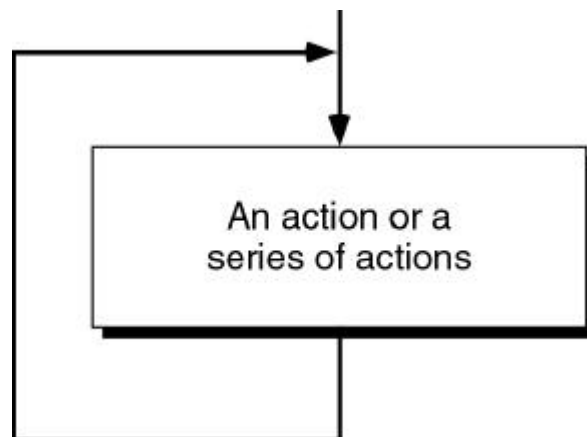
if elseif else



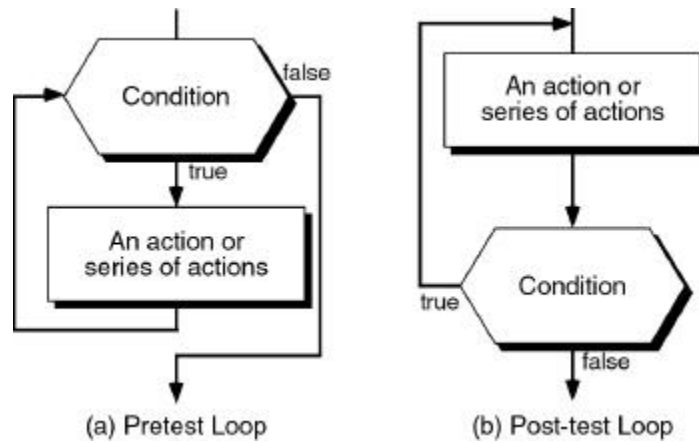
if else if else

```
if (score >= 90)
    grade = 'A';
else if (score >=80)
    grade = 'B';
.
.
.
```

Looping



Looping

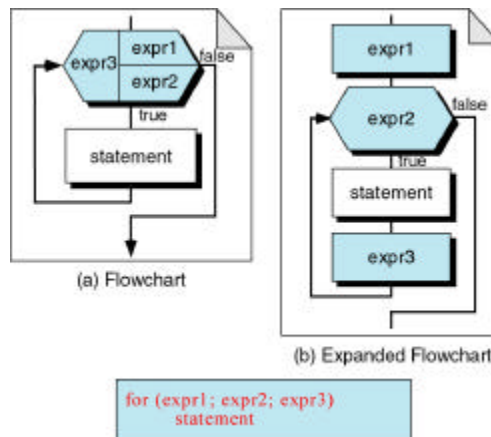


Looping

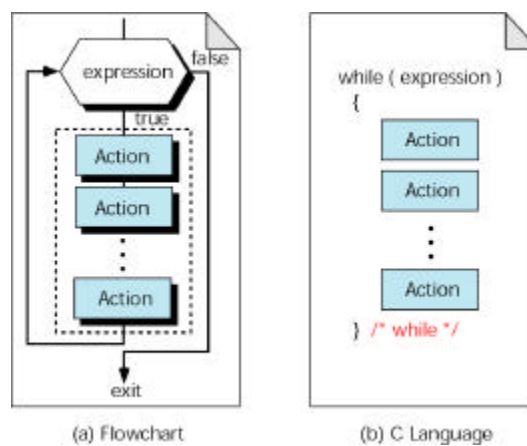
Three main types of looping in C:

- **for (pretest)**
- **while (pretest)**
- **do ...while (posttest)**

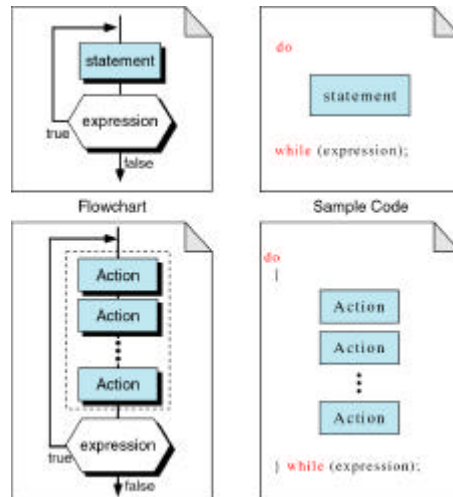
for



while



do while



do while

