

Programming for Mobile Computing

EECS 1022

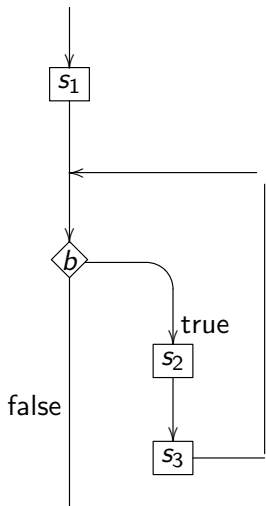
`moodle.yorku.ca`

Problem

Prompt the user for input (positive integer `COLUMN`), create a $1 \times \text{COLUMN}$ grid and set the colour of each cell to red.

For statement

```
for(s1; b; s3)
{
  s2
}
```



Syntax

```
for ( $s_1$ ;  $b$ ;  $s_3$ )  
{  
     $s_2$ ;  
}
```

Code conventions:

- for should be followed by a space and
- the body should be indented.

Row of alternating cells

Problem

Prompt the user for input (positive integer `COLUMN`), create a $1 \times \text{COLUMN}$ grid and set the colour of cells alternating to red and blue.

Problem

Prompt the user for input (positive integers ROW and COLUMN), create a ROW \times COLUMN grid and set the colour of cells to red.

Block of alternating cells

Problem

Prompt the user for input (positive integers ROW and COLUMN), create a ROW \times COLUMN grid and set the colour of cells alternating to red and blue.

Triangle

Problem

Prompt the user for input (positive integer SIZE, create a SIZE \times SIZE grid and draw a triangle.

Problem

Prompt the user for input (positive integer `SIZE`, create a `SIZE × SIZE` grid and draw a box.

Problem

Prompt the user for input (positive integer SIZE, create a SIZE \times SIZE grid and draw a tree.

Problem

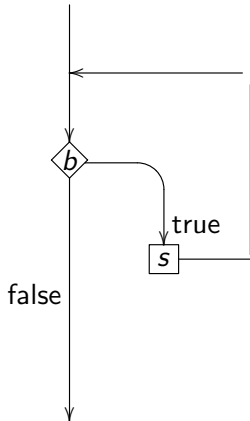
Prompt the user for input (positive integer `SIZE`, create a `SIZE` \times `SIZE` grid and draw a diamond.

Problem

Prompt the user for input (a String FILE)

```
String input = JOptionPane.showInputDialog("Please enter the file name")  
and print the content of the file.
```

While statement



Syntax

```
while (b) {  
    s;  
}
```

Code conventions:

- while should be followed by a space and
- the body should be indented.

For and while loops

Theorem

Every for-loop can be expressed as a while-loop.

Proof.

```
for ( $s_1$ ;  $b$ ;  $s_2$ ) {  
     $s_3$ ;  
}
```

can be expressed as

```
{  
     $s_1$ ;  
    while ( $b$ ) {  
         $s_3$ ;  
         $s_2$ ;  
    }  
}
```



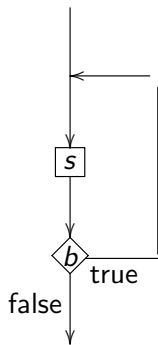
Theorem

Every while-loop can be expressed as a for-loop.

Problem

Prompt the user for input (positive integer COLUMN), create a $1 \times \text{COLUMN}$ grid and set the colour of each cell to red. **Reprompt the user if they enter a non-positive integer.**

Do statement



Syntax

```
do {  
    s;  
} while (b);
```

Code conventions:

- while should be followed by a space and
- the body should be indented.

For and do Loops

Theorem

Every for-loop can be expressed as a do-loop.

Theorem

Every do-loop can be expressed as a for-loop.

Question

So which loop should we use?

For and do Loops

Theorem

Every for-loop can be expressed as a do-loop.

Theorem

Every do-loop can be expressed as a for-loop.

Question

So which loop should we use?

Answer

It is a matter of taste. If you know the number of iterations in advance, a for-loop may be most appropriate. If the loop has to be executed at least once, a do-loop may be most appropriate.

Exercise

Prompt the user for input (positive integer number), and determine whether it is prime.

The New York Times

New Method Said to Solve Key Problem in Math

By SARAH ROBINSON

Three Indian computer scientists have solved a longstanding mathematics problem by devising a way for a computer to tell quickly and definitively whether a number is prime – that is, whether it is evenly divisible only by itself and 1.

New York Times, August 8, 2002

`http://codingbat.com/java`