



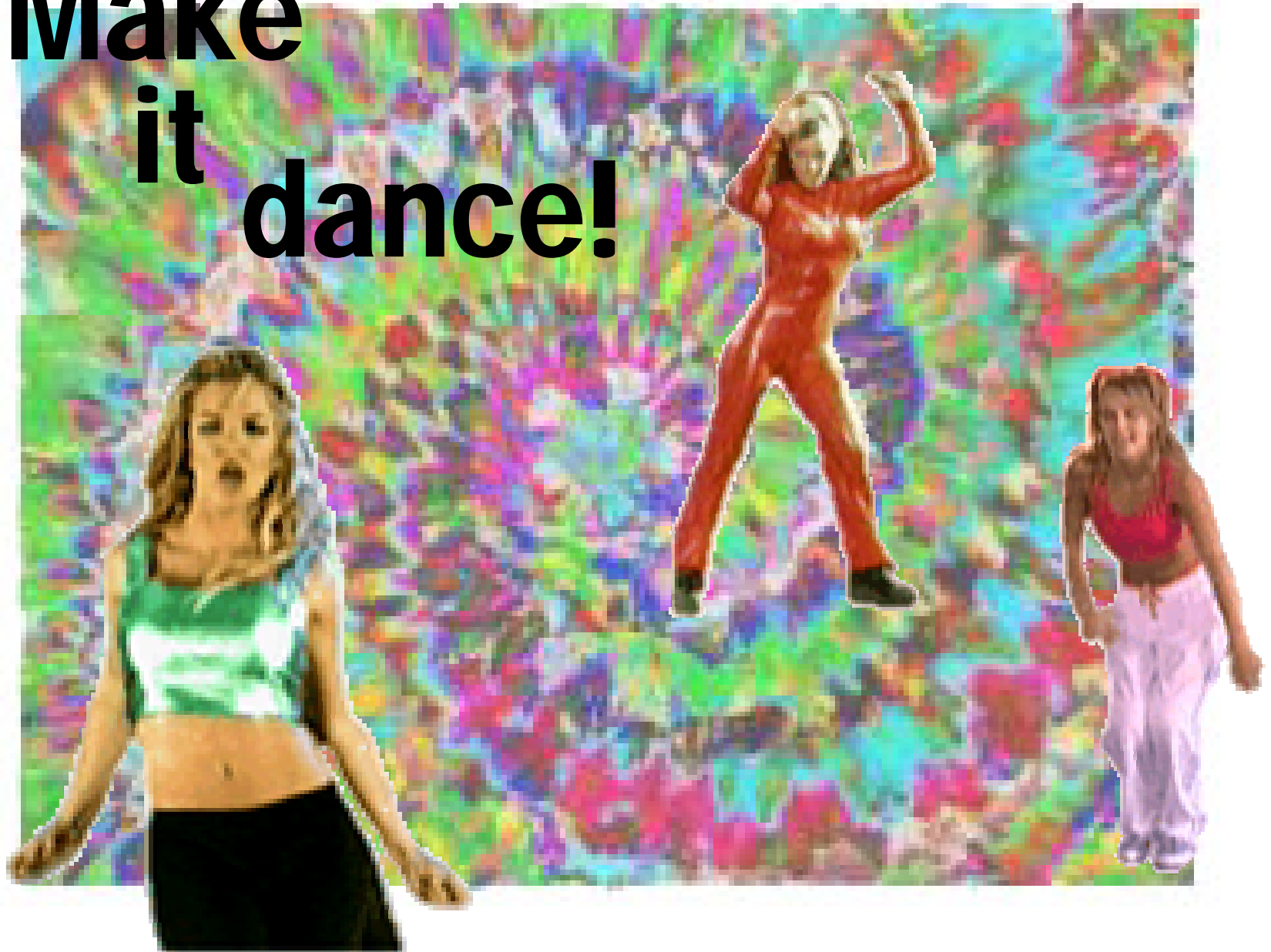
Making Robots Move



So you have a robot.

Now what?

**Make
it
dance!**



Command conversion

The commands you can use to program your robot are very similar to LOGO commands

LOGO commands

```
FORWARD 10  
BACK 10  
RIGHT 90  
LEFT 45  
REPEAT 4 [command]
```

LEGO commands

```
forward(10);  
back(10);  
right(90);  
left(45);  
for(i=0; i<4; i++)  
{  
    command;  
}
```

Let's look at some sample code:

```
#include "wrapper.h"

int i;

int main(int argc, char *argv[ ])
{

    setSpeed(10);

    while(1)
    {
        iForward();
        wait(2);

        if ( touched(1) )
        {
            rightCircle(10);
            wait(2);
            iBack();
            wait(3)

        }
        else
        {
            leftCircle(10);
            wait(10);

        }
    }

    return 0;
}
```

When you program, you should...

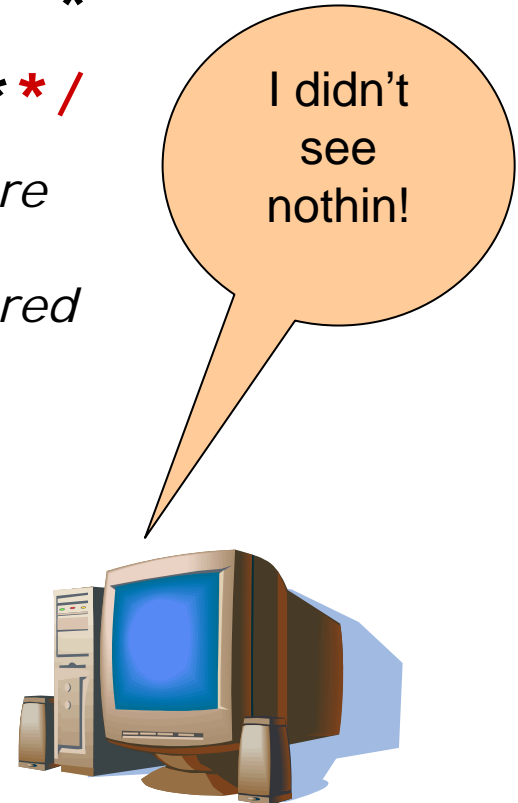
Use COMMENTS!

```
/* ****  
*          SLASHES AND STARS          *  
**** */
```

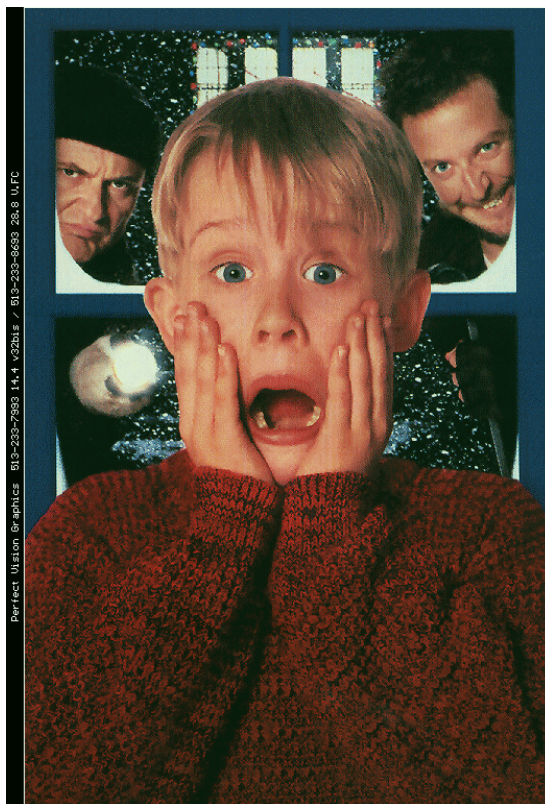
The computer will ignore anything between the slashes and stars (the red ones)

You use comments to make notes to yourself in English when you're programming.

You can see our comments in the files we've given to you.



AHHHHHHH!



Let's break that down a little bit...



Things to ignore ...

```
#include "wrapper.h"
```

```
int main()
```

```
{
```

```
...
```

```
return 0;
```

```
}
```

This connects the file you make with what we've already written

The main line tells your computer where to start. All your code goes in between the two curly braces under main().

Returning a zero at the last line tells the computer the program is over.

A really simple program

```
#include "../support/logo.h"
```

```
int main()
```

```
{
```

```
    setSpeed(10);
```

← Set the motors at the highest speed

```
    forward(3);
```

← Go forward for 3 seconds

```
    return 0;
```

```
}
```

Important stuff:

```
forward(10);
```

Commands always have a pair of parentheses attached to them

I'm a variable! Remember me??

Wherever you put a command, it should end in a semicolon

MORE important stuff:

```
if( touched(1) )
```

```
{
```


```
forward(10);
```

```
}
```

I'm a
conditional!
Remember
me??

touched(1) is
a method which
tells you if touch
sensor 1 has
been pressed.
**For more special
methods, see your
handout*

Curly braces are necessary when you
are writing conditional statements



You've created a program
and it works (yay!)
...but your robot doesn't
move *quite* as it should.

Now what?

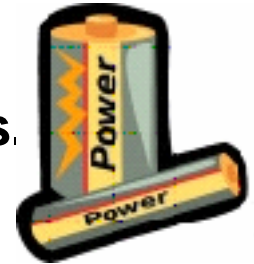


kay, so it's not as easy as pie...



nvtech.com

Like humans food for energy, robots need batteries.



If you eat a big breakfast, and we say, "Run for 12 minutes", you might run **a mile**.

If you didn't eat, and we say, "Run for 12 minutes", you might only go **half a mile**.

Robots are the same. Telling it to turn 360° is actually telling it to turn for an amount of time. If the battery is dying, it might take 400° for a circle.

Now we're going to...

- Write a few simple programs to get an idea of how things work.
- Choreograph a dance routine
- Program the dance into your robot
- Let your robot show its stuff!

