# Computer Science – Lecture 1

Karl R. Wilcox
K.R.Wilcox@reading.ac.uk

Blackboard IFP

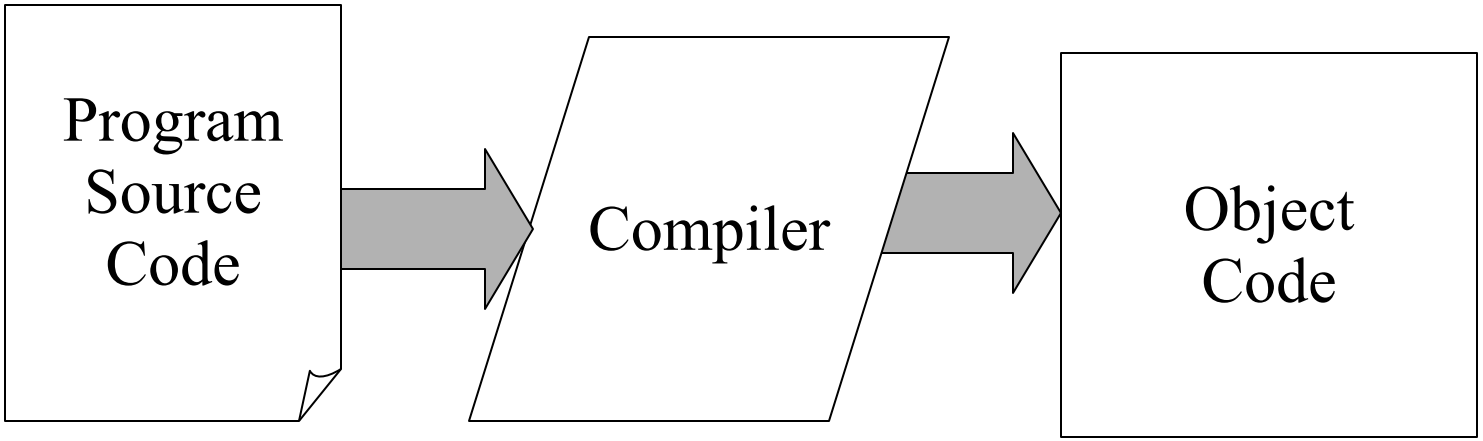
# Objectives

- To understand what a computer program is
- To write our first Pascal program
- To understand a little about the Pascal Language
- Tomorrow's practical:
  - Using Delphi for Pascal Programming

# Computer Programs

- We have looked at the hardware of computers
  - How they can add numbers
  - How to store numbers in registers
- It would be very tedious to write instructions at this very low level (`move data to register`…)
- A programming language is easier for humans to write (and read!)
- A Compiler converts the program into the low level instructions

# Compiling a Program




Delphi does all of this for you when select “RUN”

# First Pascal Program

```
program FirstOne;
// This is our first Pascal program
{$APPTYPE CONSOLE}
// line above is required to run Pascal within Delphi 6
var Prop:Char;
begin
  Write('I hope you enjoyed');
  WriteLn(' using Excel and Word; ');
  Write('now we start pascal,');
  WriteLn('everyone.');
  WriteLn; // prints a blank line
  WriteLn('Here we go!');
  ReadLn(Prop); // keeps window open until enter is
  pressed twice
end.
```

# Notes (1)

- The line `{$APPTYPE CONSOLE}` is required by the Delphi environment
- The lines:

```
var Prop:Char;
ReadLn(Prop);
```

  are necessary to keep the black console window open. They should also be added to other programs written in the Delphi environment.
- The first word of every Pascal program is the reserved word `program`. This is followed by the program name.

# Notes (2)

- All Pascal names or identifiers must begin with a letter, and then may contain any series of letters or digits or underscores. Blanks are NOT allowed in identifiers. Prop is another identifier.
- A semicolon (;) ends the first line. Semicolons separate Pascal statements.
- Comments are notes to programmers. A `//` precedes a line of comment.
- The program statement part begins with `begin` and ends with `end.` Notice that `end.` is followed by a full-stop or period.

# Writing to Output

- There are two ways to write something to output: `Write` and `WriteLn`. `WriteLn` goes to a new line after writing, but `Write` stays on the same line.
- `Write` and `WriteLn` can each take a parameter.
- In this first program each parameter is a string, that is a series of characters delimited by quotes. If the actual output is to contain a quote, then the string must contain 2 quotes.

So the statement: `write('Shan''t)`

will print out: Shan't

# Some Pascal reserved words

| and | array | begin | case | const | div |
|---|---|---|---|---|---|
| do | downto | else | end | file | for |
| functio n | if | in | mod | not | of |
| or | procedu re | progra m | recor d | repeat | then |
| to | type | until | var | while | with |

**You will learn how to use most of these during the course. You could find out about these and other reserved words from a text book or the help files. On program listings and in the Delphi editor these reserved words are bold automatically, the programmer does not have to choose any special font. Avoid them for your identifier names.**

# Using Delphi environment on PCs

- Click on the Delphi 6 icon (in Programming)
- Edit the file so it is the program above - save project
- If you cannot see the Pascal source, choose View| Unit (from the View menu).
- Compile and run the program using the menu option Run (or F9 or green arrow)

# Using Delphi environment on PCs

- If it does not run properly, close the input/output window, save project again, correct the errors and try again. F1 gives extra information about compilation errors.
- Repeat until program runs without errors
- Finally, you can use the file manager to copy your project files (the ones with the extension `.dpr`) to your own floppy from your user space
- The executables produced by Delphi are big, so it is worth deleting them. Executables end in `.exe`.

# Exercises (1)

For this course, "write a program" means design, code in Pascal, type in source file, compile and test run the program. Print out source file and test runs, and hand them in.

1. Write a program to print out your name, age and course details (on three separate lines).

# Exercises (2)

2. Write a program to draw a box like this

```
======
=    =
=    =
======
```

underneath, print the message
Here's a box!

# Exercises (3)

**3. Which of the following are valid Pascal identifiers?**

- FIVE
- VXX
- ThEN
- 4YouAnd4Me
- b2
- Space 1999
- a1eND
- ok*ok
- HaveaNiceday
- case