Course Notes, Autumn 2014

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2 Schedule

We run the sessions in a flexible way, to allow everyone to work at his/her own pace. An indicative schedule for each session is as follows.

Time	Activity
17.00-17.30	Brief lecture
17.30-18.10	Practical session
18.10-18.20	Short break
18.20-18.50	Brief lecture
18.50-19.20	Practical session
19.20-19.30	Test sheets and review
19.30	Departure

The work is mainly practical but some topics have a greater lectured element.

3 Overview of Materials

Each week, the materials include

- A practical work sheet, introducing some new concepts
- Two or so short presentations, introducing the same concepts
- Weekly tests, evaluating your progress

In addition, there is a progress log, which you are asked to complete every week.

4 Week by Week Outline

The following outline shows the topics we will be covering in the course.

Session	Topic Outline
1	**Introducing Python expressions and variable.** Topic 1.1 First Python Program Topic 1.2 Python Numbers and String Topic 1.3 Python variables
2	**Binary Numbers** Topic 2.1 Binary numbers Topic 2.2 Converting binary and decimal (plus representing images)
3	**Conditional statements and Boolean expressions** Topic 3.1 If statements Topic 3.2 Dry run a program Topic 3.3 Boolean logic and truth tables
4	**While loops & debugging** Topic 4.1 While loops Topic 4.2 Faults and debugging

Session	Topic Outline
5	**Computer Components and Memory** Topic 5.1 Computer components Topic 5.2 Memory and storage Topic 5.3 Operating Systems
6	**Arrays & for loops** Topic 6.1 Lists (Arrays) and for loops Topic 6.2 Testing
7	**Communication and the Internet** Topic 7.1 Principles of communication Topic 7.2 Internet components
8	**Defining functions** Topic 8.1 Functions Topic 8.2 Pseudo code and flowcharts Topic 8.3 Python turtle graphics
9	**Binary Logic and circuits** Topic 9.1 Logic circuits Topic 9.2 Circuits for adding
10	**Reading and writing files** Topic 10.1 Files Topic 10.2 Designing for file I/O

5 Test Sheets

There is a short test sheet for each session. You can use the test sheet to:

- Check your own progress
- Practice giving and receiving feedback by working with our course members.

6 Programming Portfolio Problem

As you work through the course, you will write a number of programs so that, by the end of the course, you have a 'portfolio' of programs. The problem built up in difficulty, so that by the end of the course they are similar to a GCSE controlled assessment.

7 Progress Log

Learning is not always a smooth experience and this is especially true for programming, where moments of clarity may alternate with moment of puzzlement. The progress log is used to record your learning experience. This is especially useful if you are learning programming for the first time as the