# Week 6 Lab MIPS Assembly language programming

## Objectives

Continue to develop experience of:

1. Programming in MIPS Assembly language including the use of branch instructions and subroutines

The remainder of the lab session should be used to work on the coursework and to ask questions of the tutor

### Part 1 Programming in MIPS Assembly language

For this part you should use any of the previous concepts and exercises on MIPS Assembly language to create a program that functions as follows:

The program asks the user for a number and then outputs a table of powers of two up to that number.

A sample output from the program would be as follows:

Please enter a whole number 8

Powers of two

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Power Value

0 1

1 2

2 4

3 8

4 16

5 32

6 64

7 128

8 256

There are many ways that you could program this, so it will need some planning. You should work in small groups to create a detailed plan of your approach to this problem. You do not need to cater for overflow or invalid input being entered. Note that there isn’t an immediate option for multiply, but multiply is “mul”.

Some of the questions that you might want to consider are:

* What registers are you going to use for what information?
* How are you going to do the input and output?
* What subroutines will you need?
* How will you control the loop?

Your group should not try to code a solution until you have a clear plan.

After giving you some time to work on your ideas, the tutor will code a solution taking instructions from one (or more) of the plans that were created. The class should discuss the advantages and disadvantages of different approaches to the problem.

### Part 2 & 3 Coursework support

This rest of the lab session is for coursework support. The tutor will give you a chance to ask general questions about the coursework before going round to offer individual support to everyone in the lab.