You should attempt as many questions as you can before the examples class.
You can discuss the questions with other students, but remember that the exam may contain similar questions, so make sure you can answer them by yourself.

Make sure that you can answer all the exercises given in the lectures

1. Translate this Java code, that performs a division by repeated subtraction, into ARM instructions.

```java
int a, x, y;
//assume some code here puts values into x and y
a = 0;
if (y != 0) {
    if (y < 0) {
        y = -y;
        x = -x;
    }
    if (x >= 0)
        while (x >= y) {
            x = x - y;
            a = a + 1;
        }
    else
        while (-x >= y) {
            x = x + y;
            a = a - 1;
        }
} // a = x / y (unless y is zero)
```

2. Write ARM code which, given the address of a string in R1, uses a loop to calculate in R0 the arithmetic total of the bytes of the string (i.e. of the ASCII representations of the characters in the string).

For example, given the string "10", consisting of the bytes '1', '0' and the terminating byte 0, I do not want the answer (decimal) 10. I want the total of the values stored in the bytes of the string that represent those characters i.e. '1' is represented by 49 and '0' is represented by 48, so the total is 97.

Do this using:
- a) indirect addressing
- b) offset (indexed) addressing
- c) pre-indexed (pre-increment) addressing
- d) post-indexed (post-increment) addressing

In each case, you should use any extra facilities of the ARM instruction set (e.g. conditional instructions) to make your code faster.

e) Which of your 4 answers (a) to (d) is the fastest, and why?