

Homework 2
UCR EE/CS120B: Introduction to Embedded Systems
Fall Quarter 2004, Lecturer Brian Grattan

Due Tuesday, Oct. 12 at the BEGINNING of lecture.

Name: _____

UCR ID#: _____

For this assignment, be sure to be neat! If you have sloppy handwriting consider using a graphical program like Dia, or Microsoft Visio.

1. (4 points) Create an algorithm to calculate the area under the curve described by x^2 from 1 to d using piece-wise summation (basically, you are integrating). Also, you will have to do it for an arbitrary accuracy (a) Do you remember how to do this from calculus? Here is the expression you are solving:

$$area = \sum_{i=1,1+a,1+2a,1+3a\dots}^d i^2 a$$

So, you will have three inputs: go , a and d and one output: $area$. You do not have to include an infinite loop like is done in the book, but you should use the go signal to start the whole process.

2. (6 points) Convert the algorithm you made in problem 1 into a state machine with data using the templates from the book.

3. (10 points) Create a data path and the FSM for the FSMD you created in problem 2.

Also, if you are interested, there is a nice resource on integration at:
<http://www.mathcentre.ac.uk/resources/workbooks/mathcentre/web-integrationreversediff.pdf>