CS1356 Introduction to Information Engineering

Supplementary Homework

Due: Nov 18, 2009 in class

Remember to write your name and student ID

This is a supplementary assignment for homework 3. There are only 80 points in this assignment. And the score of this assignment will be averaged with homework 3.

1. Answer the following questions based on the C program.

```
int main(){
    int i, a;

    for (i=0;i<5;i=i+1){
        if (i==0) a=1;
        else a = 2*a;
    }
}
```

   (a) What is this program doing? (10 points)

   (b) How do you perform `a=a*2` using the machine language of the textbook (Appendix C)? (10 points)

   (c) Translate the program into the machine language of the textbook (Appendix C). Suppose the translated program is loaded into memory started at address **A0**, and variable `i` and variable `a` are assigned to main memory at address **60**, **61** respectively. Give a short explanation for each instruction. (40 points)
      (*No credit will be given without explanation.*)

   (d) Which part of your code will be changed if it is loaded into memory starting at address B0? And how are they changed? (20 points)