

## Homework 3

(Due at the beginning of the class on Friday, March 7)

Purpose: Using all control structures.

A presidential candidate recently pledged 1) to greatly simplify the tax laws, and 2) to rewrite all the government's software in C. This sent his staff scrambling, since they did not know C (nor how to write simple laws). They finally came up with the following rules:

1) Taxable income is equal to gross income minus the standard deduction minus \$1,000 for each exemption. The standard deduction is \$3,000. The maximum number of allowable exemptions is 12. A bright student intern remembered to add the rule that the taxable income could not be less than zero.

2) The tax rate is computed from the following table based on the filing status and the taxable income:

<i>Filing status</i>	<i>Taxable income</i>	<i>Tax rate</i>
Single	less than \$5,000	15%
	\$5,000 - \$20,000	22%
	more than \$20,000	31%
Married	less than \$10,000	15%
	\$10,000 - \$40,000	22%
	more than \$40,000	31%
Married filing jointly	less than \$7,000	17%
	\$7,000 - \$25,000	24%
	more than \$25,000	33%

3) The total tax due is the taxable income times the tax rate. The student intern pointed out that this is not a "marginal tax rate", but just a simple percentage calculation. The rest of the staff decided that since the student intern was so smart, she should be given the job of writing a demonstration program for this in C, and they all left for the campaign trail.

The program is to run in a loop. Each time it asks for the following:

- Taxpayer ID (social security #) – any integer
- Filing Status – single character, must be 'S' for single, 'M' for married, 'J' for married filing jointly
- Gross Income – any floating number (negative allowed, representing a loss)
- Number of Exemptions – an integer between 0 and 12, inclusive.

It computes and prints out the taxable income, tax rate, and tax amount, and repeats for the next taxpayer. Input 0 for the taxpayer ID will terminate the loop, and the program then prints a summary including the number of taxpayers processed, the average tax amount, the highest tax amount, and the taxpayer ID of the highest tax amount. Call this program tax.c. (100 points)