SQA Assignment 4 – Spring 2017

Due: Monday, April 3, 2017 (beginning of class)

Problem Descriptions:

Suppose we are to test an income tax calculation system. An input to the system contains two numbers, (X, Y). If X = 1, it means it is for "single" filing; X = 2, for "joint" filing; other numbers are invalid input. Y represents the income of the filing and must be an integer positive number.

The tax calculation rule follows.

For single filing:

Income range	Tax rate
0-$10K (inclusive)	0
$10K - $60K (incl. $60K)	10%
$60K - $120K (incl. $120K)	20%
$120K - $180K (incl. $180K)	30%
$180K and above	40%

For joint filing

Income range	Tax rate
0-$20K (inclusive)	0
$20K - $120K (incl. $120K)	10%
$120K - $240K (incl. $240K)	20%
$240K - $360K (incl. $360K)	30%
$360K and above	40%

For example, with an input of (2, 135K), the calculation would be:

First $20K, no tax
($120K - $20K) * 0.1 = $10K
($135K - $120K) * 0.2 = $3K

The total tax would be $3K + $10K= $13K

Design test cases to cover all boundaries for this system. Some invalid test cases must also be designed. Note: a test case should contain both input and expected output, i.e., ((X, Y), tax).