School of Innovation, Design and Engineering

Module I Assignment 1 (0.5hp)

This document provides the instructions for the Module I Assignment 1 in DVA-448. The assignment, when completed in both parts, corresponds to 0.5 credits in total of the 2.5 credits in the course examination. The assignment is split into two parts, Part A and Part B.

Assignment 1, Part A: Dynamic Slicing Based RTS (0.25hp)

Objective

This assignment lets you exercise and practice one of the regression test selection techniques discussed in this course.

Reporting

Please send your answers in a written individual report (no more than two normal pages) to wasif.afzal@mdh.se.

Description

Compute the dynamic slice for variable `z` at line 11 for program `P.0` (shown below) corresponding to the trace obtained while executing it against:

t: <N=2, x_1=2, x_2=4>.

Assume that: `f(2)=0` and `f(4)>0`. Also describe two cases where one or more modifications to `P.0` will result in (i) inclusion and (ii) exclusion of `t` in the regression test suite `T'`.

```
Program P.0
          int x1, x2, z, I, N;
1         input (N);
2         i=1;
3         z=0;
4         while (i<N){
5                   input (x1, x2);
6                   if (f(x1) == 0)
7                             z=1;
8                   if (f(x2) > 0)
9                             z=2;
10                  i++;
          }
11        output (z);
          end
```

Assignment 1, Part B: Data Flow Analysis Based RTS (0.25hp)

Objective

The objective of Part B of Assignment 1 is to let you read, understand and reflect on data flow based regression test selection technique.

Description

In the assignment, you will read and answer a few questions based on a regression test selection technique that uses data flow analysis.

You will read one paper. The title of the paper is: "*An approach to software fault localization and revalidation based on incremental data flow analysis*".

In order to get started with the assignment, you first need to download the paper from the following link:

http://www.promptedu.se/promptwp/wp-content/uploads/2016/03/DF.pdf

Please read the paper carefully.

Questions and Report

Once you have read the paper, please answer the following questions. Please send your answers in a written individual report (no more than two normal pages) to wasif.afzal@mdh.se.

1. What is the basis for regression test selection in this paper? Please be specific in your description.
2. In addition to regression test selection, what other applications of the given approach are discussed in the paper? How are these applications related to each other?
3. How do you relate this regression test selection technique to other techniques discussed in the course so far? What are its advantages and drawbacks?
4. Given that paper is quite outdated (being published in 1989), do you think the paper is still relevant? If yes, why and if no, why not.