

Study Questions and Questionnaire for Lecture 2

Study questions

- a) We gave an "axiom" (assertion oriented definition) for a "one sided" conditional, i.e. if C then S. Construct an axiom for a "two sided" conditional, i.e. if C then S1 else S2
- b) Construct an intermediate assertion for the following algorithm, identify all pairs of assertions A1,A2 which have an assertion free path between them, and for each argue that if A1 is true and the path followed, then A2 will be true

```
present(element, a[]), n) /{integer: element, a[], n; n > 0}
j = 0;
result = False;
while (j < n)
    {if (a[j] == element)
        {result = True;
         exit;}
     else j = j+1;
    }
/{ if element == a[k] for some k, 0 <= k < n then result = True, else False}
```

Questionnaire

Please give a brief explanation for each answer

- a) Do you think the assertion oriented approach, where you construct input, output and intermediate assertions for a program helps you to mentally simulate the action of a program?
- b) Does the concept of mental simulation help to justify this approach to program reasoning, i.e. make it clearer what the assertion oriented approach is all about
- c) In order to mentally simulate a program, it is necessary to have a firm idea of what the program statements "do". Even though we seldom use them at the formal level of detail, do you think that knowing about them makes your thinking clearer and less open to error, when you are mentally simulating a program?