

S3 2009/10 – Condizioni di verifica – Parte IV

## RAFFINAMENTO DI VARIABILI ESTERNE

S3-VC-C.Montangero - Copyright 2010 49

---

---

---

---

---

---

---

---

### Attributi di prova impliciti

- Per ogni variabile esterna Vin in modo **in**
  - Vin'Tail definisce l'effetto dell'assegnamento della variabile esterna a una interna
- Per ogni variabile esterna Vout in modo **out**
  - Vin'Append definisce l'effetto dell'assegnamento alla variabile esterna di una interna

S3-VC-C.Montangero - Copyright 2010 50

---

---

---

---

---

---

---

---

### Tipico sensore

```
package Sensor
--# own in Stream;
is
procedure Read(X : out Integer);
--# global Stream;
--# derives X from Stream;
end Sensor;
```

- Se nelle prove è coinvolto solo l'ultimo valore letto, basta

```
--# post X = Stream~;
```

S3-VC-C.Montangero - Copyright 2010 51

---

---

---

---

---

---

---

---

### Controllo del valore massimo

```
Limit : constant Integer := 100;
procedure AboveLimit(Result : out Boolean)
--# global Sensor.Stream;
--# derives Result from Sensor.Stream;
--# post Result <-> (Sensor.Stream~ > Limit);
is
  Reading : Integer;
begin
  Sensor.Read(Reading);
  Result := Reading > Limit;
end AboveLimit;
```

- con le vc seguenti

S3-VC - C.Montangero - Copyright 2010

52

---

---

---

---

---

---

---

---

---

---

For path(s) from start to finish:

```
procedure_abelimit_1.
H1: true .
H2: sensor__stream >= integer__first .
H3: sensor__stream <= integer__last .
H4: reading__1 = sensor__stream .
->
C1: (reading__1 > 100) = (sensor__stream > 100) .
```

- che viene semplificata

S3-VC - C.Montangero - Copyright 2010

53

---

---

---

---

---

---

---

---

---

---

### Valori crescenti?

```
procedure Rising(Result : out Boolean)
--# global Sensor.Stream;
--# derives Result from Sensor.Stream;
--# post Result <->
--# Sensor.Stream'Tail(Sensor.Stream~)>Sensor.Stream~;
is
  Reading1, Reading2 : Integer;
begin
  Sensor.Read(Reading1);
  Wait.Ten;
  Sensor.Read(Reading2);
  Result := Reading2 > Reading1;
end Rising;
```

- con le vc

S3-VC - C.Montangero - Copyright 2010

54

---

---

---

---

---

---

---

---

---

---

### Valori crescenti?

```
procedure_rising_1.  
H1: true .  
H2: sensor__stream >= integer__first .  
H3: sensor__stream <= integer__last .  
H4: reading1__1 = sensor__stream .  
H5: sensor__stream_1 = sensor__nextreading(sensor__stream) .  
H6: reading2__2 = sensor__stream_1 .  
H7: sensor__stream_2 = sensor__nextreading(sensor__stream_1) .  
->  
C1: (reading2__2 > reading1__1) <->  
    (sensor__nextreading(sensor__stream) > sensor__stream) .
```

- con le vc

S3-VC - C.Montangero - Copyright 2010

55

---

---

---

---

---

---

---

---

---

---

### Caveat

- il nome X~ diventa 'x~' in Prolog (file .rlu)

S3-VC - C.Montangero - Copyright 2010

56

---

---

---

---

---

---

---

---

---

---