

CS 6V81-002: Quiz 15 Solutions

March 26, 2008

1. Which of the following are advantages of Foundational PCC over conventional PCC? (circle all that apply)
 - (a) proof size is reduced due to smaller number of axioms
 - (b) increased flexibility due to more general proof logic**
 - (c) proof generation is easier using a source-level meta-logic
 - (d) proof-checker is smaller due to the use of a higher-order logic**
2. VCGen was easier to implement for FPCC than for conventional PCC because... (circle one)
 - (a) the VCGen on FPCC was synthesized automatically by Twelf
 - (b) in FPCC the code-producer supplies a VCGen implementation as part of the proof obligation
 - (c) VCGen was developed and compiled using the FPCC certifying compiler itself
 - (d) the FPCC implementation didn't include a VCGen**
3. FPCC's object-logic has types for which of the following? (circle all that apply)
 - (a) terms**
 - (b) propositions**
 - (c) proofs of terms
 - (d) proofs of propositions**
4. FPCC's *decode* function... (circle one)
 - (a) transforms an object-logic term into a meta-logic term
 - (b) transforms term-proof pair into a proof
 - (c) transforms an executable binary into a sequence of integers
 - (d) transforms an integer into a machine instruction semantics**
5. Consider the following propositional logic based on FPCC's meta-logic:

$$o ::= true \mid o_1 \Rightarrow o_2 \mid \forall A.o \mid A$$

Encode the proposition *false* as a term in this logic.

$$\forall A.A$$