COMS22201

Class TEST

04/02/2016

Please enter your username here:

Question 1: Consider the following C program, which uses the variable `z` to compute the value of `x` raised to the power of (the initial value of) `y`:

```
int z=x; while (y-- > 1) do z*= x;
```

Now find a loop invariant which could be used to prove the correctness of this program for all initial `x`, `y` > 0. Note you are not being asked to actually do the proof, but to simply state the invariant – so do any working overleaf.

Please enter your loop invariant here:

Question 2: Using Haskell syntax, define two algebraic `data` types called `Bit` and `Word`, such that a `Bit` is either `On` or `Off` and a `Word` is any non-empty sequence of `Bit`s. Note you should distinguish upper and lower case letters.

Please enter your type definitions here: