Andrew Plum
Prof. Beeston
CS 210
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Assignment #2

1) <pattern> ::= <name> | __ | <constant> | <tuple> | <list> | <cons>

   <more patterns> ::= , <pattern> <more patterns> | <empty>

   <tuple> ::= (<pattern>, <pattern> <more patterns>)

   <list> ::= [] | [<list element> <more list elements>]

   <cons> ::= <list element> :: <list>

   <more list elements> ::= , <list element> <more list elements> | <empty>

2)b)

Step	Action
1	$x = 3k$; k is an integer
2	$y = 24m$; m is an integer
3	$y = 24m$
	$= 3(8m)$
	$x = 3k$; k is an integer because $(8m)$ is an integer
	$\therefore x := y$ is safe

c) Counter example: 7 is a prime integer greater than 3
   and is not divisible by 3
   $\therefore z := x$ is unsafe

Back Side

e)

Step	Action
1	$y = 24k$; k is an integer
2	z = is a prime integer > 3
3	This must mean z is odd
4	$z^2 - 1 = (z-1)(z+1)$
5	$(z-1)$ & $(z+1)$ are both even integers & because they are both consecutive even integers, either $(z-1)$ is a multiple of 4 & $(z+1)$ is a multiple of 2 or $(z-1)$ is a multiple of 2 & $(z+1)$ is a multiple of 4
6	$(z-1)$ or $(z+1)$ must also be a multiple of 3 because $(z-1)$, z, & $(z+1)$ are 3 consecutive integers; z can't be divisible by 3 because it is prime
7	$y = 2 \cdot 2 \cdot 2 \cdot 3 \cdot k = 24k$ ∴ Y := (z * z) - 1 is safe

Work: x is prime integer > 3
$$x^2 - 1 = (x-1)(x+1)$$
$$(x-1) \quad x \quad (x+1)$$
$$\uparrow \text{even} \quad \uparrow \text{odd} \quad \uparrow \text{even}$$

3)

L3A [8]

L2A [3]   L2B [4]   L2C [6]   L2D [7]   L2E [9]   L2F [11]

L1A [2]   L1B [5]   L1C [10]

My Class [1]