Homework 4

CIS-623 STRUCTURED PROGRAMMING & FORMAL METHODS

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Question 1:

1 Find the weakest precondition:

$$wp(x=x+y,!(x>y))$$

$$W_{x}(x=x+y), !(x>y)) = !(x+y>y)$$

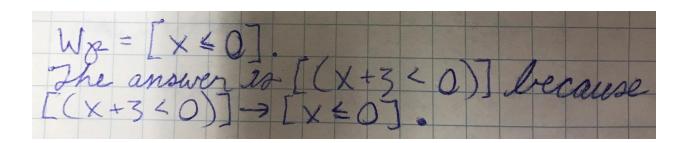
 $!(x>y-y) =$
 $!(x>0) =$
 $W_{x} = [x < 0]$

Question 2:

2. Which of the following is valid?

$$[xy)]$$

 $[!(x>y)] x=x+y [!(x>y)]$
 $[(x+3<0)] x=x+y [!(x>y)]$



Question 3:

3. Find the weakest precondition

wp(if y>0 then x=x+y else x=x-y, x>10)

$$W_{\mathcal{P}}(x_{y} \neq 0 \text{ then } x = x+y \text{ else } x = x-y, x>10)$$

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Question 4:

4. Which of the following is valid.

[x+y>10] if y>0 then x=x+y else x=x-y [x>10] [x>10] if y>0 then x=x+y else x=x-y [x>10] [y>10] if y>0 then x=x+y else x=x-y [x>10]

The answer so [x+y>10] because [x+y>10] -> [x+y>10].