RESOLVE Verifying Compiler Activities #1

Name: _____
Name: _____
One CM: _____

To Do:

- Navigate to the RESOLVE Compiler's Web IDE
- Click *Components* button, then from dialog choose *Programs*
- Do Activities 101 through 104
- Answer prompting questions below as you do the activities

Activity_101_Reasoning_about_Assignments

Activity 1a: Why does *main* prove? _____
Activity 2a: Did anything unexpected occur? _____
Activity 2b: Write down *ensures* for K that proved: _____
Activity 2c: Write down *ensures* for K that did not prove: _____
Activity 3+: Write down one exploration you tried out: _____

Activity_102_Reasoning_about_Design_by_Contract

Activity 1a: What is another good name for *Exchange*?: _____

Activity 1c: How many VCs are there for *Exchange*? _____
Why? _____

Activity 2: Provide the code you wrote: _____
What is the difference between *Op_1* & *Op_2*? _____

Activity 3: Provide the contract you wrote: _____
(a) Does your contract include a *requires*? _____
(b) Why or why not? _____
(c) Did your *ensures* have two conjuncts? _____
(d) If *yes*, tell how one conjunct could be eliminated? _____

Activity 4+: In the context of design-by-contract …
What is the responsibility of:
(a) The calling operation? _____
(b) The called operation? _____

What benefit is provided to:
(c) The calling operation? _____
(d) The called operation? _____

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Activity_103_Reasoning_about_Swapping

Activity 4+: Compare `:=` with `:=:` …

(a) What is the *ensures* for `J := K; ?` _____

(b) What is the *ensures* for `J :=: K; ?` _____

Activity_104_Reasoning_about_If_Statements

Activity 2a: After replacing `:=:` with `:=` if you uncommented the Confirm on line #31,
Will both "Confirms" hold? _____

Activity 3: (a) Assuming your new 3rd variable is named 'Z', write down the Confirm that asserts that the outgoing 'X' holds the max value: _____

(b) Add additional code to make the outgoing 'Y' holds the minimum value:
Describe the code you added: _____

(c) What Confirm did you write to assert that 'Y' holds the minimum value?
_____

(d) Provide a Confirm that asserts the value of 'Z' is between 'X' and 'Y'?
_____

Activity_104a_Reasoning_about_DBC_and_If_Statements

Activity 3b: What operation's *requires* clause cannot be confirmed by the verifier?
_____

Activity 4+: (a) Write down your new *ensures* for Reorder: _____

(b) Take a shot at modifying *main* so that it verifies when calling Reorder_2.
Did you get it to verify? _____