Interprocedural Analysis:

Basic Flow:

Used LLVM passes to go through each Basic Block, Function, and Instruction.

Code Analysis:

1. Function to Calculate the VARKILL of the Callee (The Flow Sensitive method):
   1. Here at first, I build a processor map for each block.
   2. Next if the instruction type is store, add the second operand into that basic block’s VARKILL.
   3. Then I add the successors Var kill for each black depending on the map. This depends on the formula.
2. Function to Calculate the UEVAR of the Callee Function (The Flow Sensitive method):
   1. Here at first, I build a processor map for each block.
   2. If instruction type is store, then add it to the Var kill of that block.
   3. If instruction type is load, then if it not in Var kill add it to UEVAR of that block.
   4. Then for this block, add the UEVAR of its predecessors and remove the Var kill of that basic block.
3. Function to calculate the Liveness of the Callee Function. Since this is the Context Sensitive way, we cannot just recursively call Visitor Function. Currently hardcoded to function "minitest()":
   1. Here at first, I build a processor map for each block.
   2. If instruction type is store, then add it to the Var kill of that block.
   3. If instruction type is load, then if it not in Var kill add it to UEVAR of that block.
   4. If the instruction type is Call, use the above two function from 1 and 2 to calculate the Var Kill and UEVAR for the function that is called. Add these to the basic block in which this function is called.
   5. Calculate Liveness
   6. Print out the UEVAR,LIVEOUT,VARKILL
4. The function to calculate the Interprocedural analysis Liveness of The Test() function. Currently hardcoded to calculate for test() function only.
   1. Here at first, I build a processor map for each block.
   2. If instruction type is store, then add it to the Var kill of that block.
   3. If instruction type is load, then if it not in Var kill add it to UEVAR of that block.
   4. If the instruction type is Call, use the above two function from 1 and 2 to calculate the Var Kill and UEVAR for the function that is called. Add these to the basic block in which this function is called.
   5. Calculate Liveness
   6. Now calculate the liveness for the callee using 3, in a context sensitive way.
   7. Print out the liveness of the callee functions if it exists.
   8. Print out the IPA Liveness of the main function.