

Programming Problem Solving Worksheet

Step 1: Problem Summary

Read the instructions/problem Description. Then write a 2-3 sentence summary that includes the problem, the desired solution, and the main purpose of the program.

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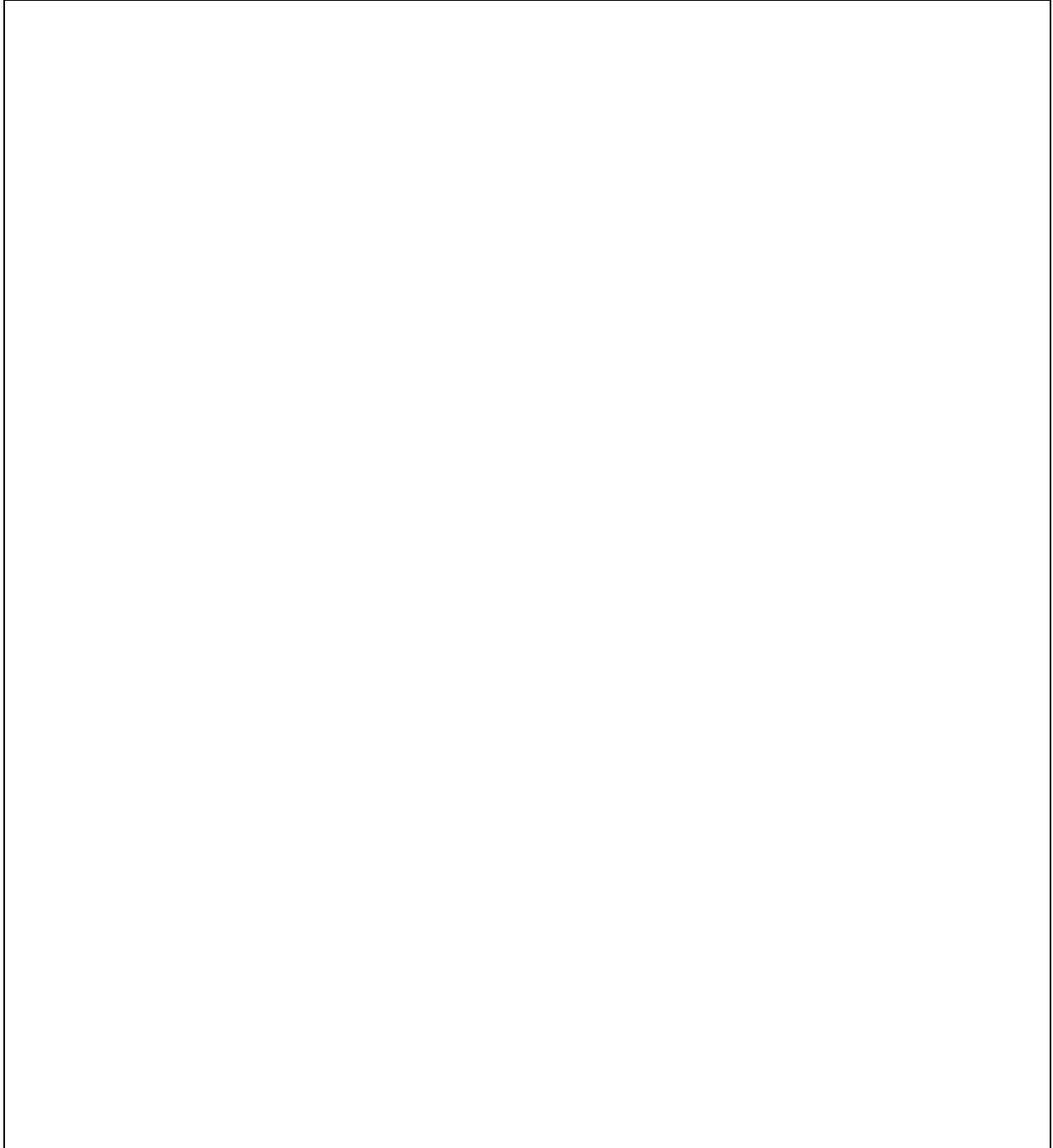
Step 2: Constraints

Reread the instructions/problem description. Note the constraints explicitly stated in the instructions as well as the implied constraints (such as those arising from the abilities of the language in which you are programming). Note that functions required by the instructions are also explicit constraints. Note also that edge cases are constraints that are implicit within the problem.

Explicit Constraints (required by instructions)
Implicit Constraints (language constraints, edge cases, etc)

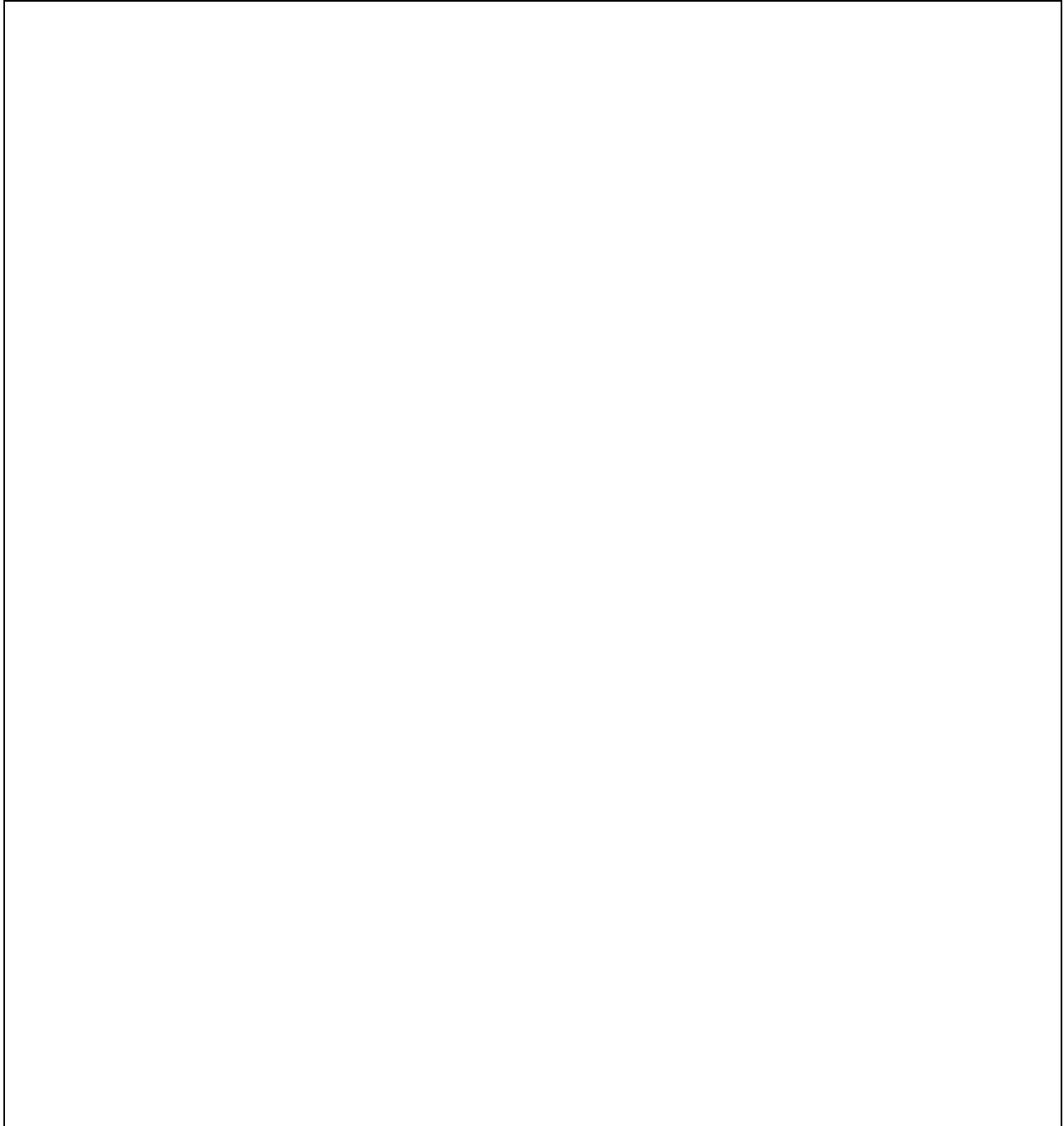
Step 3: Human Procedure (General)

Write out a procedure for how a human would solve the problem. Keep the steps large and *general*.

A large, empty rectangular box with a thin black border, intended for the student to write a general procedure for solving a problem. The box occupies most of the lower half of the page.

Step 4: Human Procedure (Detailed)

Break down the general procedure into *small* and *simple* tasks. Write them out step-by-step as if you are speaking to a young child. Leave room between steps so you can add more as needed.

A large, empty rectangular box with a thin black border, intended for writing the detailed human procedure steps. The box is currently blank.

Step 5: Visualize the Problem

Using your problem summary from step 1 and your human procedure from steps 3 and 4, draw out a visual representation of the problem and your proposed method of solving the problem. *Pay special attention to the edge cases.*



If you need to, you may *temporarily* ignore some constraints to help you in visualizing the solution. Remember, however, that *you must address those constraints in the final solution*. Note wherever you have eliminated a constraint as well as which constraint you are ignoring.

Step 6: Begin Planning your Code.

In your human procedure, note the nouns. They are eligible to be variables, classes, subclasses, or objects. Note the verbs, these are potential functions or methods.

Potential classes, subclasses, objects, or variables
Potential functions or methods

Step 7: Begin Translating the Human Procedure.

Note what types of loops, decision statements, data structures, etc. might be useful.

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Step 8: Scheduling

Plan out a schedule for when you will implement various aspects of the code. Note the program deadline, and your professor's office hours, and arrange for enough time to complete the entire program with an extra few days to seek out help.

COURSE DEADLINE:	
PLANNED DEADLINE:	
Proposed Schedule	

Reminders:

As you begin coding:

- Test your code after each logical step as outlined in step 3.
- Start with the logical steps you already know how to do or have done before.
- Do not be afraid to ask for help when you need it. But remember not to be overly reliant on others. If you get help, make sure you understand the help you were provided.
- Take small breaks as needed if you become too frustrated to work efficiently. Go for a walk and drink some water.

