PROBLEM DEFINITION TABLE

Problem Identification

One technique used to help clearly identify the problem is a Problem Definition Table. A PDT divides the problem into 3 areas: Known Facts; User Requirements; Necessary Processing

Known Facts: what is it that we know about the problem? what additional information is required?

User Requirements: what is it that the user is required to do? what does the user what done?

Necessary Processing: what steps must take place to accomplish what the user wants done?

A Problem Definition Table is organized in a chart form. Point form information is included in the chart.

Known Facts	**User Requirements**	**Necessary Processing**
-what is known about the problem? -what additional information is required?	-what is it that the user is required to do? -what does the user want done?	-what steps must take place to accomplish what the user wants done?

Practice

Create a Problem Definition Table for each of the following computer programming problems:

1. Over the past 150 years the population of Canada has been increasing at an average rate of 5.5% each year. Assuming that the population was 24,000,000 in 1980, write a computer program that finds the year in which the population will reach or exceed 50,000,000 (given the past growth rate continues).

Known Facts	**User Requirements**	**Necessary Processing**
• pop increase by 5.5% each year • pop is 24 million in 1980	• the year when the pop reaches or exceeds 50 million	• to calculate the rate of growth we divide 5.5% by 100 and add it to 1 to get 1.055 • next multiply this growth rate by the current population to get the population of the following year • check to see if this current population reaches or exceeds 50 million and if so we have our answer and if not repeat the from the last step/bullteted point

2. Write a computer program that will change an amount in dollars and cents into the fewest number of coins: toonies, loonies, quarters, dimes, nickels, and pennies. The program will continue asking the user to enter amounts until zero is entered.

Known Facts	**User Requirements**	**Necessary Processing**
-Each coin has a different value of worth. -toonie - 2$ -loonie 1$ -quarter $.25 -dime $.10 -nickel $.05 -pennie $.01 - We need to use the fewest amount of coins. - This is in CAD	- We need to input the user's total amount of money!!!! -The amound of money in the fewest amount of coins	-Using modulo on the user input number to find the remainder. This is with toonies, loonies, quarters, dimes, nickels, and finally pennies.

3. Create a program that retrieves the 8 marks a student has received on their report card. Calculate their average and indicate its equivalent letter grade.

Known Facts	**User Requirements**	**Necessary Processing**
- The maximum a student can get on their report card is a 100% and the lowest is 0% - A is a 100%-80% - B is a 79%-70% - C is a 69%-60% - D is 59%-50% - R is a 49% - 0%	- The user to input the 8 courses. - The user to input the percentage on each course	-If course<=100 and course>=80 then display "A" -If course<=79 and course>=70 then display "B" -If course<=69 and course>=60 then display "C" -If course<=59 and course>=50 then display "D" -If course<=49 and course>=0 then display "R"