**Identifying the Problem and the Solution**

The British Design Council created the *double-diamond design process model*, which divides the design process into four stages:

1. Discover
2. Define
3. Develop
4. Deliver

The first two phases refer to the divergence and convergence process of finding the right problem, and the last two phases refer to the divergence and convergence process of finding the right solution.

Don Norman (2013) describes how the above phases are actually completed using the Human-Centered Design process, which also consists of four stages:

1. Observation
2. Idea generation
3. Prototyping
4. Testing

The Human-Centered Design process is an iterative process meaning that the phases are repeated until the problem and solution are accurately described.

Working within your group, please select a problem and describe how you would apply these models to the chosen problem. For the assigned problem, please identify the problem and the solution (yes, that means code it!).

*Problem 1:*

Given denominations of dollar bills: $1, $2, $5, $10, $20, $50, $100. How many different ways can you make change? Of all the different ways, which one is the most efficient, meaning that it uses the least number of bills?

*Problem 2:*

How does one solve a Sudoku puzzle? In a Sudoku puzzle, some numbers are already entered. Beyond solving the puzzle, your solution should be as efficient as possible.

*Problem 3:*

Find a fake coin in a set of nine identical-looking coins. You know that the fake coin is heavier than the rest. Your goal is to minimize the number of weighings.