**Program 101d**

**(Periodic Table)**

**Program Description:** The periodic table of chemical elements classifies and displays all chemical elements. Each chemical element has a unique symbolic name and atomic number (number of protons). Chemcial elements are grouped together by common characteristics (alkali metal, poor metal, ...) called the chemical series.

Examples of chemical elements:

* H (hydrogenium): Hydrogen with atomic number 1.
* O (oxygenium): Oxygen with atomic number 8.
* K: Potassium with atomic number 19. It is an *alkali metal*.
* Zn: Zinc (from german Zink) with atomic number 30. It is a *transition metal*.
* Ga: Gallium with atomic number 31. It is a *metal*.

We consider the following chemical series:

* *Alkali metals* are all chemical element with atomic number 3, 11, 19, 37, 55, or 87
* *Transition metals* are all chemical elements with atomic number from 21 to 31, 39 to 48, 72 to 80, and 104 to 112.
* *Metals*are all chemical elements with atomic number 13, 49, 50, 81, 82, 83, 113, 114, 115, or 116.

Design and implement a class ChemicalElement. The class should contain methods to retrieve for a chemical element its name, symbolic name, atomic number, and which type of metal it is (three different methods for each metal property). Write a program which uses the ChemicalElement Class which asks the user for a choice (between 5 elements) and then reports on the element that was chosen

**Statements Required:** input, decision, class, output

**Sample output:**

1. Hydrogen
2. Oxygen
3. Carbon
4. Calcium
5. Lithium

Please enter the choice of the element you would like to see 1

Hydrogen has a symbol of H and an atomic number 1 and is not a metal