## Python Project:

- Create a Python program.
- Include the necessary Program Header and use descriptive comments.
- 1. This programming project will display information about the energy released by **Earthquakes**.

The Richter scale is a way to quantify the magnitude of an earthquake using a base-10 logarithmic scale. The magnitude is defined as the logarithm of the ratio of the amplitude of waves measured by a seismograph to an arbitrarily small amplitude. An earthquake that measures 5.0 on the Richter scale has a shaking amplitude 10 times larger than one that measures 4.0, and corresponds to a 31.6 times larger release of energy.

- 2. **FORMULAS**: For the Richter scale value, your program will perform the appropriate calculations.
  - The **Energy** (measured in joules) released for a particular Richter scale measurement is given by the following formula:

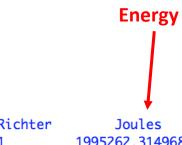
Energy = 
$$10^{(1.5*Richter)+4.8}$$

• You can relate the energy released in joules to tons of exploded TNT:

- 3. **PRINT**: Place the data [1.0, 5.0, 9.1, 9.2, 9.5] in a list. Use a **for loop** to iterate through the list and output the calculations in 3 columns as displayed below, including the column headings.
  - 1.0
  - 5.0
  - 9.1 (Indonesia earthquake, 2004)
  - 9.2 (Alaska earthquake, 1964)
  - 9.5 (Chile earthquake, 1960; largest ever measured)
- 4. **INPUT**: Prompt the user for a floating-point **Richter** scale number typically on a scale from 1-10. (Your prompt should be descriptive).

## 5. **PRINT**:

- The Richter scale value inputted,
- Equivalence of Energy (in joules),
- Equivalence in tons of TNT (in joules)
- 6. Loop to repeatedly prompt the user to enter another Richter scale number until entering a value to stop (for example the number 0 to stop the loop).
  - If a user enters a negative number at the prompt, output an appropriate message.



Richter Joules TNT
1 1995262.3149688789 0.00047687913837688307
5 1995262314968.8828 476.87913837688404
9.1 2.818382931264449e+18 673609687.2046962
9.2 3.981071705534953e+18 951498973.5982201
9.5 1.1220184543019653e+19 2681688466.3048882

Please enter a Richter scale value: 3.4

Richter scale value: 3.4

Equivalence in joules: 7943282347.242789

Equivalence in tons of TNT: 1.8984900447521007