

## 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:

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

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

$$1 \text{ ton of exploded TNT} = 4.184 \times 10^9 \text{ joules}$$

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.

### Energy



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
```