

Exercise 6

1. Calculate the square root from the user input number and print out the value.

```
Please input the number: 144
Square Root for 144 is 12.0
```

2. Radioactive decay happens when an unstable atom loses energy by emitting ionizing radiation. The rate of radioactive decay is measured using half-life, which is the time it takes for half the amount of the parent nucleus to decay. The formula for the decay process is:

$$N(t) = N_{(0)} e^{\frac{-0.693t}{T}}$$

- $N_{(0)}$ is the initial quantity of the substance.
- $N_{(t)}$ is the quantity that still remains and has not yet decayed after a time (t).
- T is the half-life of the decaying quantity.
- e is Euler's number.

The radioisotope strontium-90 (Sr-90) has a half-life of 38.1 years. Develop a program to calculate the remaining milligrams of Sr-90 after specified years:

```
Please input the initial quantity: 100
Please input number of years: 100
The Remaining quantity after 100 year is 16.22044604811303
```

3. Display the current date and time in following format: yyyy-mm-dd HH:MM:SS.

```
2020-10-14 16:03:50
```

4. Develop a program to accept two dates input from user, then calculate the difference between these two dates.

```
Please input the start date in yyyy-mm-dd: 2024-01-01
Please input the end date in yyyy-mm-dd: 2024-03-31
There are 90 days between 2024-01-01 and 2024-03-31
```

5. Develop a program to create a number of samples within 1 to 1000 according to user input. Then find the standard deviation for it.

```
How many samples you want to create between 1 to 1000? 10
Sample List is: [472, 190, 82, 617, 552, 965, 975, 756, 585, 216]
Standard Deviation = 310.2790858422641
```

```
How many samples you want to create between 1 to 1000? 5
Sample List is: [934, 900, 837, 331, 702]
Standard Deviation = 245.6454762457473
```

6. By importing the random module, generate a random number between 1 and 9. Ask the user to guess the number, then tell them whether they guessed too low, too high, or exactly right.
- Keep the game going until the user guesses the correct answer.
 - Keep track of how many guesses the user has taken, and when the game ends, print this out.

```
I have a number between 1-9, please guess.
Please input your number:5
You input is too small! Try agian!
Please input your number:7
You input is too large! Try agian!
Please input your number:6
You get the correct answer after 3 try
```