- A string is one or more characters used as a constant in a program
  - e.g. “Hello”

```
//program will need to use class Scanner to receive input from user
import java.util.Scanner;

//program will need to use class String to declare variables as strings
import java.lang.String;

public class Addition
{
        public static void main( String args[] )
        {
        //create Scanner to obtain input from command window
        //in is a variable name used to read an input from a user
        Scanner duh = new Scanner( System.in );
        String name;

        System.out.println ( “Enter your last name :” );
        name = duh.next();  //read string from user NOTICE we use in.next()

        System.out.print (“Your last name is ”);
        System.out.println (name);
        }
}
```

- how do we enter spaces into a string?

name = in.nextLine();

```
//program will need to use class Scanner to receive input from user
import java.util.Scanner;

//program will need to use class String to declare variables as strings
import java.lang.String;

public class Addition
{
        public static void main( String args[] )
        {
        //create Scanner to obtain input from command window
        //in is a variable name used to read an input from a user
        Scanner in = new Scanner( System.in );
        String name;

        System.out.println ( “Enter your full name :” );
        name = in.nextLine();  //read string from user NOTICE we use in.next()
```

```
        System.out.print (“Your last name is ”);
        System.out.println (name);
        }
}
```

Exercise – User Input

Write the following programs in Java. Ensure that the text in your output matches the sample output.

1. Create a program that prompts the user for the following information for a student card: last name, first name, student number, home form, grade, and school. Print the card neatly in the middle of the output screen

```
Scanner input = new Scanner( System.in );
String surname;
String name;
int studentnumber;
int grade;
String school;
System.out.println("What is your last name ?");
surname = input.nextLine();
System.out.println("What is your first name ?");
name=input.nextLine();
System.out.println("What is your student number ?");
studentnumber = input.nextInt();
System.out.println("What grade are you in ?");
grade = input.nextInt();
System.out.println("What school do you go to ?");
school = input.next();
System.out.println("\t\t\t" + "Student Card" + "\n" + "\t\t\t" +
surname + "\t\t\t" + "\n"+ "\t\t\t" + name + "\n" + "\t\t\t" +
studentnumber + "\n" + "\t\t\t" + grade + "\n" + "\t\t\t" + school);
```

2. Write a program to calculate the total number of hours someone has watched TV in their life. You are given their age and the average number of hours of TV they watch per day. Assume they did not watch TV until they were 2 yrs old. Forget about leap years.

Test Input	**output**
Enter Age: 15 Enter number of TV hours watched per day: 3	You’ve watched approx: ???hours in your life

```
int age;
int hours;
int startage;
int totalhour;
startage = 2;
System.out.print("Enter age:");
```

```
            age = input.nextInt();
            System.out.print("Enter number of TV hours watched per day");
            hours = input.nextInt();
            totalhour = ((age - startage) * (365*hours));
            System.out.print("You've watched approx " + totalhour + " hours
in your life");
```

3. Write a program that prompts for the height and width of a rectangle. The program will calculate and output the area. When testing the program, be sure you enter integers.
    a. Rewrite the program using real numbers in the place of integers.

Sample Output
Enter the height of the rectangle 5 Enter the width of the rectangle 4 The area of the rectangle is 20

```
        int height;
        int width;
        int area;
        System.out.println("Enter the height of the rectangle");
        height = input.nextInt();
        System.out.println("Enter the width of the rectangle");
        width = input.nextInt();
        area = (height*width);
        System.out.print("The area of the rectangle is " + area);
```

4. Prompt for an object's mass (in kg) and acceleration (in m/s^2), then calculate and print force (in N). (force = mass * acceleration)

Sample Output
Enter the object's mass in kg 3 Enter the object's acceleration in m/s**2 5.3 The force of the object with a mass of 3 kg and acceleration of 5.3 m/s**2 is 15.9 N.

```
            int mass;
            int acceleration;
            int force;
            System.out.println("Enter the object's mass in kg");
            mass = input.nextInt();
            System.out.println("Enter the object's acceleration in m/s");
            acceleration = input.nextInt();
            force = mass*acceleration;
            System.out.print("The force of the object with a mass of " + mass
+ " and acceleration of " + acceleration + "m/s is " + force + "N")
```

5. Write a program that prompts for the number of hours and outputs the equivalent number of days.

Sample Output
Enter the total number of hours

300 There are 12.5 days in 300 hours

```
float hours;
float days;
System.out.println("Enter the total number of hours");
hours =input.nextFloat();
days = hours/24;
System.out.println("There are " + days + " in " + hours);
```

6. Write a program that prompts for the number of minutes and outputs the equivalent numbers of days.

Sample Output
Enter the total number of minutes 1000 There are 0.6944444 days in 1000 minutes.

```
Scanner input = new Scanner (System.in);
float minutes;
float days;
System.out.println("Enter the total number of minutes");
minutes = input.nextFloat();
days = (minutes/(60*24));
System.out.print("There are " + days + " days"+ " in " + minutes + "
minutes.");
```

7. Write a program that asks for a person's year of birth and outputs their age in the current year. Don't worry about months.

Test Input	**Output**
Enter birth year: 1902	You must be 101 years old.

```
Scanner input = new Scanner (System.in);
int year;
int current;
int age;
current = 2020;
System.out.println("Enter birth year:");
year = input.nextInt();
age = (current-year);
System.out.println("You must be " + age + " old.");
```

8. Create the following string in JAVA: *w = "abcdefghijklmnopqrstuvwxyz"*. Remember, according to Java, The first letter in the string is 'a' at the index starts at 0. Therefore 'b' is located at index 1.

    a. Write a program that will prompt the user for an integer called *n*. The program will output the n^{th} letter associated with that number STARTING at 1. For example, if 2 was entered the program will output 'b' (instead of 'c').

```
Scanner input = new Scanner (System.in);
String w;
w = "abcdefghijklmnopqrstuvwxyz";
int n;
```

```
System.out.println("Enter an integer:");
n = input.nextInt();
System.out.println("The " + n + "th number is " + w.charAt(n-1));
```

b. Write a program that will prompt the user for two integers called *x* and *y*. The program will output the letters in the range for x to y inclusive. For example if *x* = 1 and *y* = 4, the program will output 'abcd'.

```
String w;
w = "abcdefghijklmnopqrstuvwxyz";
int x;
int y;
System.out.println("Enter an integer:");
x = input.nextInt();
System.out.println("enter another integer");
y = input.nextInt();
System.out.println("The letters in the range of " + "" + x + " and " + y +
" are " + w.substring(x-1,y));
```

c. Write a program that will prompt the user for two integers called *x* and *y*. The program will output the letters in between *x* and *y*. For example if *x* = 1 and *y* = 4, the program will output 'bc'.

```
String w;
w = "abcdefghijklmnopqrstuvwxyz";
int x;
int y;
System.out.println("Enter an integer:");
x = input.nextInt();
System.out.println("enter another integer");
y = input.nextInt();
System.out.println("The letters in the range of " + "" + x + " and " + y +
" are " + w.substring(x,y-1));
```