

1. **Create a program to print odd and even numbers between 1 to the number entered by the user.**

Hint =>

- a. **Get an integer input from the user, assign to a variable number and check for Natural Number**
- a. **Using a for loop, iterate from 1 to the number**
- a. **In each iteration of the loop, print the number is odd or even number**

```
import java.util.Scanner;
```

```
public class OddEvenNumbers {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number;  
  
        System.out.println("Enter a positive integer: ");  
        number = myobj.nextInt();  
  
        if (number < 1) {  
            System.out.println("Please enter a natural number (1 or greater).");  
        } else {  
            for (int i = 1; i <= number; i++) {  
                if (i % 2 == 0) {  
                    System.out.println(i + " is an even number.");  
                } else {  
                    System.out.println(i + " is an odd number.");  
                }  
            }  
        }  
    }  
}
```

```
        myobj.close();
    }
}
```

2. Create a program to find the bonuses of employees based on their years of service.

Hint =>

- a. Zara decided to give a bonus of 5% to employees whose year of service is more than 5 years.**
- a. Take salary and year of service in the year as input.**
- a. Print the bonus amount.**

```
import java.util.Scanner;
```

```
public class EmployeeBonus {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        double salary, bonus = 0.0;
        int yearsOfService;

        System.out.println("Enter your salary: ");
        salary = myobj.nextDouble();

        System.out.println("Enter your years of service: ");
        yearsOfService = myobj.nextInt();

        if (yearsOfService > 5) {
            bonus = 0.05 * salary;
            System.out.println("You are eligible for a bonus!");
        }
    }
}
```

```

        System.out.println("Your bonus amount is: " + bonus);
    } else {
        System.out.println("You are not eligible for a bonus.");
    }

    myobj.close();
}
}

```

3. Create a program to find the multiplication table of a number entered by the user from 6 to 9.

Hint =>

- a. Take integer input and store it in the variable number**
- a. Using a for loop, find the multiplication table of number from 6 to 9 and print it in the format number * i = ____**

```
import java.util.Scanner;
```

```

public class MultiplicationTable {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;

        System.out.println("Enter a number to find its multiplication table: ");
        number = myobj.nextInt();

        System.out.println("Multiplication table of " + number + " from 6 to 9:");

        for (int i = 6; i <= 9; i++) {

```

```

        System.out.println(number + " * " + i + " = " + (number * i));
    }

    myobj.close();
}
}

```

4. Write a program FizzBuzz, take a number as user input, and check for a positive integer. If positive integer, loop and print the number, but for multiples of 3 print "Fizz" instead of the number, for multiples of 5 print "Buzz", and for multiples of both print "FizzBuzz".

Hint =>

Take the user input number, check for a positive integer, and use *for* loop to display

```

import java.util.Scanner;

public class FizzBuzz {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;

        System.out.println("Enter a positive integer: ");
        number = myobj.nextInt();

        if (number < 1) {
            System.out.println("Please enter a positive integer.");
        } else {
            for (int i = 1; i <= number; i++) {

```

```

        if (i % 3 == 0 && i % 5 == 0) {
            System.out.println("FizzBuzz");
        } else if (i % 3 == 0) {
            System.out.println("Fizz");
        } else if (i % 5 == 0) {
            System.out.println("Buzz");
        } else {
            System.out.println(i);
        }
    }
}

myobj.close();
}
}

```

5. Rewrite the program 4 FizzBuzz using the while loop

```

import java.util.Scanner;

public class FizzBuzzWhileLoop {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;

        System.out.println("Enter a positive integer: ");
        number = myobj.nextInt();
    }
}

```

```

if (number < 1) {
    System.out.println("Please enter a positive integer.");
} else {
    int i = 1;
    while (i <= number) {
        if (i % 3 == 0 && i % 5 == 0) {
            System.out.println("FizzBuzz");
        } else if (i % 3 == 0) {
            System.out.println("Fizz");
        } else if (i % 5 == 0) {
            System.out.println("Buzz");
        } else {
            System.out.println(i);
        }
        i++;
    }
}

myobj.close();
}
}

```

- 6. Create a program to find the youngest friends among 3 Amar, Akbar, and Anthony based on their ages and the tallest among the friends based on their heights**

Hint =>

- a. Take user input for the age and height of the 3 friends and store it in a variable**

- a. Find the smallest of the 3 ages to find the youngest friend and display it
- a. Find the largest of the 3 heights to find the tallest friend and display it

```
import java.util.Scanner;
```

```
public class YoungestAndTallest {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        int ageAmar, ageAkbar, ageAnthony;
```

```
        double heightAmar, heightAkbar, heightAnthony;
```

```
        System.out.println("Enter Amar's age: ");
```

```
        ageAmar = myobj.nextInt();
```

```
        System.out.println("Enter Amar's height (in cm): ");
```

```
        heightAmar = myobj.nextDouble();
```

```
        System.out.println("Enter Akbar's age: ");
```

```
        ageAkbar = myobj.nextInt();
```

```
        System.out.println("Enter Akbar's height (in cm): ");
```

```
        heightAkbar = myobj.nextDouble();
```

```
        System.out.println("Enter Anthony's age: ");
```

```
        ageAnthony = myobj.nextInt();
```

```
        System.out.println("Enter Anthony's height (in cm): ");
```

```
        heightAnthony = myobj.nextDouble();
```

```
        String youngest = (ageAmar < ageAkbar && ageAmar < ageAnthony) ? "Amar"
```

```
        :
```

```
            (ageAkbar < ageAnthony) ? "Akbar" : "Anthony";
```

```
String tallest = (heightAmar > heightAkbar && heightAmar > heightAnthony) ?  
"Amar" :
```

```
(heightAkbar > heightAnthony) ? "Akbar" : "Anthony";
```

```
System.out.println(youngest + " is the youngest.");
```

```
System.out.println(tallest + " is the tallest.");
```

```
myobj.close();
```

```
}
```

```
}
```

7. Create a program to find the factors of a number taken as user input.

Hint =>

- a. Get the input value for a variable named number and check if it is a positive integer.**
- b. Run a *for* loop from $i = 1$ to $i < \text{number}$. In each iteration of the loop, check if the number is perfectly divisible by i . If true, print the value of i .**

```
import java.util.Scanner;
```

```
public class FactorsOfNumber {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        int number;
```

```
        System.out.println("Enter a positive integer: ");
```

```
        number = myobj.nextInt();
```



```

    if (number < 1) {
        System.out.println("Please enter a positive integer.");
    } else {
        System.out.println("Factors of " + number + " are:");
        for (int i = 1; i <= number; i++) {
            if (number % i == 0) {
                System.out.println(i);
            }
        }
    }

    myobj.close();
}
}

```

8. Rewrite the above program 7 to find the factors of a number using the *while* loop

Hint =>

- a. Get the input value for a variable named number and check if it is a positive integer.
- a. Create a counter variable and run the *****while***** loop till the counter is less than the user input number. In each iteration of the loop, check if the number is perfectly divisible by the counter. If true, print the value of the counter.

```
import java.util.Scanner;
```

```

public class FactorsWhileLoop {
    public static void main(String[] args) {

```

```

Scanner myobj = new Scanner(System.in);
int number, i = 1;

System.out.println("Enter a positive integer: ");
number = myobj.nextInt();

if (number < 1) {
    System.out.println("Please enter a positive integer.");
} else {
    System.out.println("Factors of " + number + " are:");
    while (i <= number) {
        if (number % i == 0) {
            System.out.println(i);
        }
        i++;
    }
}

myobj.close();
}
}

```

- 9. Create a program to print the greatest factor of a number beside itself using a loop.**

Hint =>

- a. Get an integer input and assign it to the number variable. As well as define a greatestFactor variable and assign it to 1**
- b. Create a *for* loop that runs from last but one till 1 as in $i = \text{number} - 1$ to $i = 1$.**
- c. Inside the loop, check if the number is perfectly divisible by i then assign i to greatestFactor variable and break the loop.**

c. Display the greatestFactor variable outside the loop

```
import java.util.Scanner;

public class GreatestFactor {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number, greatestFactor = 1;

        System.out.println("Enter a positive integer: ");
        number = myobj.nextInt();

        if (number < 2) {
            System.out.println("No greatest factor exists besides itself.");
        } else {
            for (int i = number - 1; i >= 1; i--) {
                if (number % i == 0) {
                    greatestFactor = i;
                    break;
                }
            }

            System.out.println("The greatest factor of " + number + " besides itself is: " +
greatestFactor);
        }

        myobj.close();
    }
}
```

10. Rewrite the above program to print the greatest factor of a number beside itself using a *while* loop.

Hint =>

- a. Get an integer input and assign it to the number variable. As well as define a greatestFactor variable and assign it to 1**
- b. Create a variable counter and assign *counter = number - 1*; Use the *while* loop till the counter is equal to 1.**
- c. Inside the loop, check if the number is perfectly divisible by the counter then assign the counter to greatestFactor variable and break the loop.**
- c. Display the greatestFactor variable outside the loop**

```
import java.util.Scanner;
```

```
public class GreatestFactorWhileLoop {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number, greatestFactor = 1, counter;  
  
        System.out.println("Enter a positive integer: ");  
        number = myobj.nextInt();  
  
        if (number < 2) {  
            System.out.println("No greatest factor exists besides itself.");  
        } else {  
            counter = number - 1;  
            while (counter >= 1) {  
                if (number % counter == 0) {  
                    greatestFactor = counter;  
                    break;  
                }  
            }  
        }  
    }  
}
```

```

        }
        counter--;
    }
    System.out.println("The greatest factor of " + number + " besides itself is: " +
greatestFactor);
}

myobj.close();
}
}

```

11. Create a program to find all the multiples of a number taken as user input below 100.

Hint =>

- a. Get the input value for a variable named number. Check the number is a positive integer and less than 100.
- a. Run a *for* loop backward: from i = 100 to i = 1.
 - b. Inside the loop, check if i perfectly divide the number. If true, print the number and *continue* the loop.

```
import java.util.Scanner;
```

```

public class MultiplesOfNumber {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;

        System.out.println("Enter a positive integer less than 100: ");
    }
}

```

```

number = myobj.nextInt();

if (number < 1 || number >= 100) {
    System.out.println("Please enter a number between 1 and 99.");
} else {
    System.out.println("Multiples of " + number + " below 100 are:");
    for (int i = 100; i >= 1; i--) {
        if (i % number == 0) {
            System.out.println(i);
        }
    }
}

myobj.close();
}
}

```

12. Create a program to find the power of a number.

Hint =>

- a. Get integer input for two variables - number and power and check for positive integer
- a. Create a result variable with an initial value of 1.
- a. Run a for loop from i = 1 to i <= power. In each iteration of the loop, multiply the result by the number and assign the value to the result. Finally, print the result

```
import java.util.Scanner;
```

```

public class PowerOfNumber {
    public static void main(String[] args) {

```

```

Scanner myobj = new Scanner(System.in);

int number, power, result = 1;

System.out.println("Enter a positive integer (base number): ");
number = myobj.nextInt();

System.out.println("Enter a positive integer (power): ");
power = myobj.nextInt();

if (number < 1 || power < 0) {
    System.out.println("Please enter a positive base and a non-negative
power.");
} else {
    for (int i = 1; i <= power; i++) {
        result *= number;
    }
    System.out.println(number + " raised to the power of " + power + " is: " +
result);
}

myobj.close();
}
}

```

13. Rewrite the program to find all the multiples of a number below 100 using *while* loop.

Hint =>

a. Get the input value for a variable named number. Check the number is a positive integer and less than 100.

- a. Create a counter variable and assign *counter = number - 1*; Use a *while* till the counter is *> 1*
- c. Inside the loop, check if the counter perfectly divides the number. If true, print the number and *continue* the loop.

```
import java.util.Scanner;
```

```
public class MultiplesWhileLoop {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number, counter;  
  
        System.out.println("Enter a positive integer less than 100: ");  
        number = myobj.nextInt();  
  
        if (number < 1 || number >= 100) {  
            System.out.println("Please enter a number between 1 and 99.");  
        } else {  
            System.out.println("Multiples of " + number + " below 100 are:");  
            counter = 100;  
            while (counter > 1) {  
                if (counter % number == 0) {  
                    System.out.println(counter);  
                }  
                counter--;  
            }  
        }  
  
        myobj.close();  
    }  
}
```


}

14. Rewrite the above program to find the power of a number using a *while* loop.

Hint =>

- a. Get integer input for two variables named number and power.**
- a. Create a result variable with an initial value of 1.**
- d. Create a temp variable counter and initialize to zero. Use the *while* loop till `__**counter == power**__`.**
- c. In each iteration of the loop, multiply the result by the number and assign the value to the result. Also, increment the counter.**
- c. Finally, print the result**

```
import java.util.Scanner;
```

```
public class PowerWhileLoop {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number, power, result = 1, counter = 0;  
  
        System.out.println("Enter a positive integer (base number): ");  
        number = myobj.nextInt();  
  
        System.out.println("Enter a non-negative integer (power): ");  
        power = myobj.nextInt();  
  
        if (number < 1 || power < 0) {  
            System.out.println("Please enter a positive base and a non-negative  
power.");  
        }  
    }  
}
```

```
} else {  
    while (counter < power) {  
        result *= number;  
        counter++;  
    }  
    System.out.println(number + " raised to the power of " + power + " is: " +  
result);  
}  
  
    myobj.close();  
}  
}
```