Week 2 - Level 2 - 10 Practice Problems

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

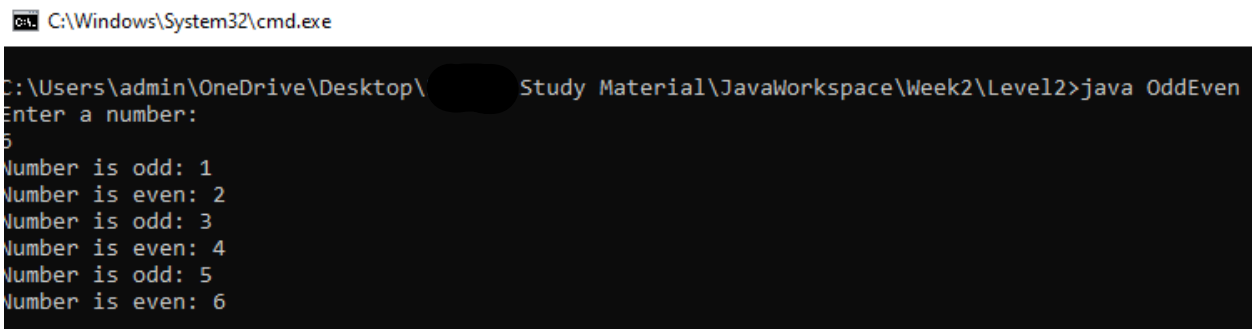
   Hint =>

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

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class OddEven {
   public static void main(String[] args) {
      int n;//declare variable
      Scanner myObj = new Scanner(System.in);//declare scanner object
      // Prompt user to enter a number
      System.out.println("Enter a number:");//prompt user for input
      n = myObj.nextInt();//store value in variable
                  for(int i=1;i<=n;i++){
      // Check if the number is even
      if (i % 2 == 0) {
         System.out.println("Number is even: "+i);
      }
      // If the number is not even, it is odd
      else {
         System.out.println("Number is odd: "+i);
      }
   }
         }
}
```

Output Verification:



2.Create a program to find the bonus 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.
b. Take salary and year of service in the year as input.
c. Print the bonus amount.

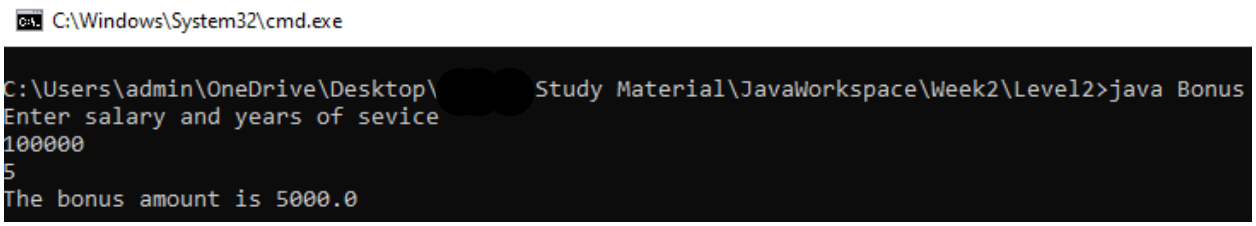
Ans)// Import the Scanner

```
import java.util.Scanner;

//declare class

public class Bonus {
   public static void main(String[] args) {
      // Declare variables
      int sal, year;
      double bonus;
      // Create a Scanner object
      Scanner myobj = new Scanner(System.in);
      // Prompt the user to enter input
      System.out.println("Enter salary and years of service:");
      // Store input in variables
      sal = myobj.nextInt();
      year = myobj.nextInt();
      // Calculate the bonus
      bonus = sal * 0.05;
      // Check if the years of service are 5 or more
      if (year >= 5) {
         // If yes, print the bonus amount
         System.out.println("The bonus amount is " + bonus);
      } else {
         // If no, print that the user is not eligible
         System.out.println("Not Eligible");
      }
   }
}
```

Output Verification:



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

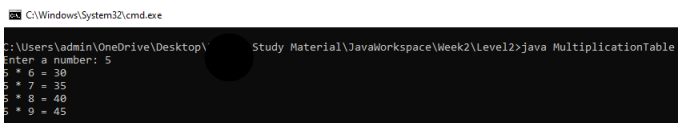
Hint =>

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

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class MultiplicationTable {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);//declare scanner object
        // Take integer input and store it in the variable 'number'
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();
        // Using a for loop, find the multiplication table of 'number' from 6 to 9
        for (int i = 6; i <= 9; i++) {
            // Print the multiplication table
            System.out.println(number + " * " + i + " = " + (number * i));
        }
    }
}
```

Output Verification:



4. Write a program FizzBuzz, take a number as user input, and if it is a positive integer loop from 0 to the number 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 =>

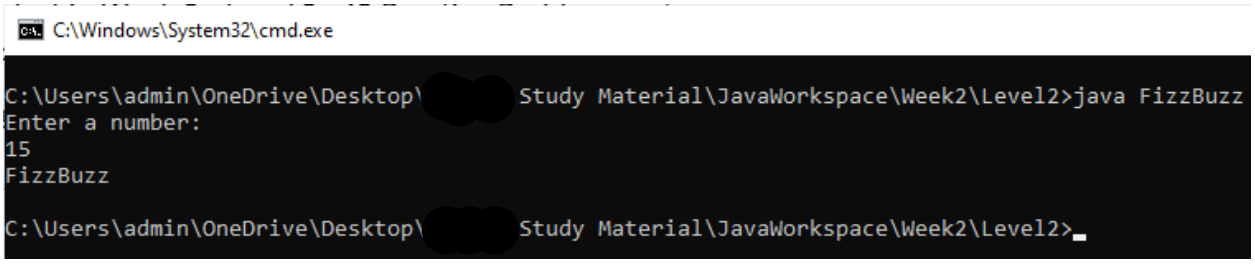
a. Write the program and use ***for*** loop

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class FizzBuzz {
   public static void main(String[] args) {
      int n;//declare variable
      Scanner myObj = new Scanner(System.in);
      // Prompt user to enter a number
      System.out.println("Enter a number:");//prompt user for input
      n = myObj.nextInt(); //assigning values to variable
      // Check if the number is 0 or negative
      if (n <= 0) {
         System.out.println("Not a positive integer.");
      } else {
         // Loop from the entered number to one
         for (; n > 0; n--) {
            // Check if the number is divisible by both 3 and 5
            if ((n % 3 == 0) && (n % 5 == 0)) {
               System.out.println("FizzBuzz");
            }
            // Check if the number is divisible by 5 only
            else if (n % 5 == 0) {
               System.out.println("Buzz");
            }
            // Check if the number is divisible by 3 only
```

```
            else if (n % 3 == 0) {
                System.out.println("Fizz");
            }
            // If the number is not divisible by 3 or 5
            else {
                System.out.println("A positive integer");
            }break;
        }
    }
  }
}
```

Output Verification:



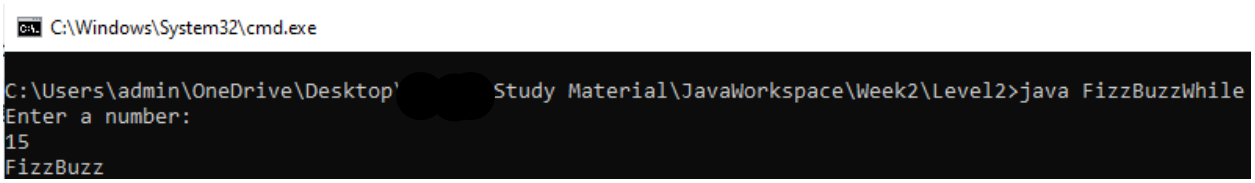
5. Rewrite the program 4 FizzBuzz using while loop

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class FizzBuzzWhile {
    public static void main(String[] args) {
        int n;//declare variables
        Scanner myObj = new Scanner(System.in);//declare scanner object
        // Prompt user to enter a number
        System.out.println("Enter a number:");
        n = myObj.nextInt();//store input in variable
        // Check if the number is 0 or negative
        if (n <= 0) {
```

```
            System.out.println("Not a positive integer.");
        } else {
            // Loop from the entered number to one
            while (n > 0) {
                // Check if the number is divisible by both 3 and 5
                if ((n % 3 == 0) && (n % 5 == 0)) {
                    System.out.println("FizzBuzz");
                }
                // Check if the number is divisible by 5 only
                else if (n % 5 == 0) {
                    System.out.println("Buzz");
                }
                // Check if the number is divisible by 3 only
                else if (n % 3 == 0) {
                    System.out.println("Fizz");
                }
                // If the number is not divisible by 3 or 5
                else {
                    System.out.println("A positive integer");
                }break;
            }
        }
    }
}
```

Output Verification:



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 =>

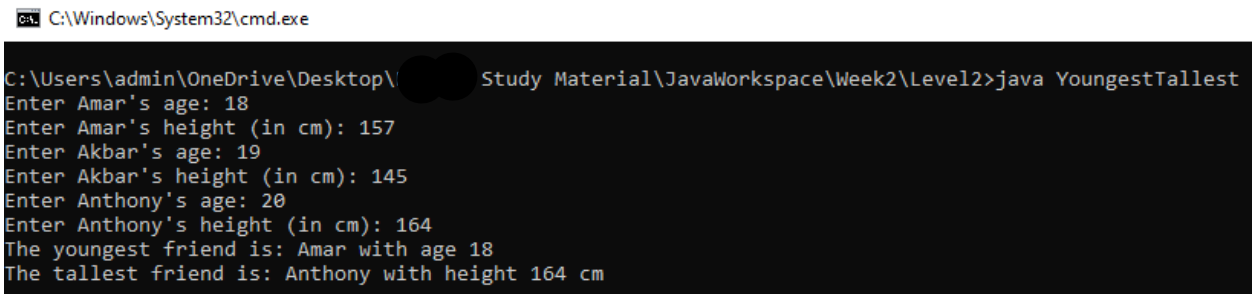
a. Take user input for the age and height of the 3 friends and store it in a variable
b. Find the smallest of the 3 ages to find the youngest friend and display it
c. Find the largest of the 3 heights to find the tallest friend and display it

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class YoungestTallest {
   public static void main(String[] args) {
                int amarAge,amarHeight,akbarAge,akbarHeight,anthonyAge,anthonyHeight;
      Scanner scanner = new Scanner(System.in);
      // Input ages and heights for Amar
      System.out.print("Enter Amar's age: ");
      amarAge = scanner.nextInt();
      System.out.print("Enter Amar's height (in cm): ");
      amarHeight = scanner.nextInt();
      // Input ages and heights for Akbar
      System.out.print("Enter Akbar's age: ");
      akbarAge = scanner.nextInt();
      System.out.print("Enter Akbar's height (in cm): ");
      akbarHeight = scanner.nextInt();
      // Input ages and heights for Anthony
      System.out.print("Enter Anthony's age: ");
      anthonyAge = scanner.nextInt();
      System.out.print("Enter Anthony's height (in cm): ");
      anthonyHeight = scanner.nextInt();
      // Find the youngest friend
      int youngestAge;
      String youngestFriend;
```

```
        if (amarAge < akbarAge && amarAge < anthonyAge) {
            youngestAge = amarAge;
            youngestFriend = "Amar";
        } else if (akbarAge < amarAge && akbarAge < anthonyAge) {
            youngestAge = akbarAge;
            youngestFriend = "Akbar";
        } else {
            youngestAge = anthonyAge;
            youngestFriend = "Anthony";
        }
        // Find the tallest friend
        int tallestHeight;
        String tallestFriend;
        if (amarHeight > akbarHeight && amarHeight > anthonyHeight) {
            tallestHeight = amarHeight;
            tallestFriend = "Amar";
        } else if (akbarHeight > amarHeight && akbarHeight > anthonyHeight) {
            tallestHeight = akbarHeight;
            tallestFriend = "Akbar";
        } else {
            tallestHeight = anthonyHeight;
            tallestFriend = "Anthony";
        }
        // Display results
        System.out.println("The youngest friend is: " + youngestFriend + " with age " +
youngestAge);
        System.out.println("The tallest friend is: " + tallestFriend + " with height " + tallestHeight + "
cm");
    }
}
```

Output Verification:



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

Hint =>

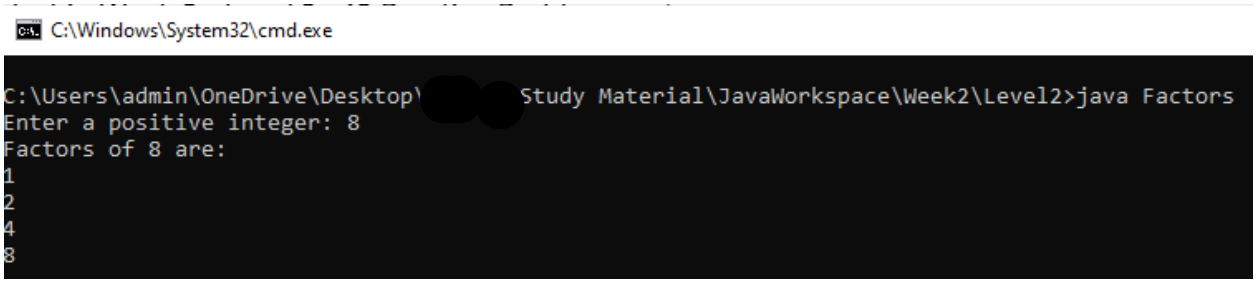
a. Get input value for a variable named number.
b. Run a ***for*** loop from i = 1 to i < number. In each iteration of the loop, check if the number is perfectly divisible by i. If true, print the value of i.

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Factors {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);//declare scanner object
        //Get the input value for a variable named number
        System.out.print("Enter a positive integer: ");//prompt user for input
        int number = scanner.nextInt();//store value in variable
        // Check if the number entered is a positive integer
        if (number <= 0) {
            System.out.println("Please enter a positive integer.");
        } else {
            // Run a for loop from i = 1 to i < number
            System.out.println("Factors of " + number + " are:");
            for (int i = 1; i <= number; i++) {
                // Check if the number is perfectly divisible by i
                if (number % i == 0) {
                    // If true, print the value of i
                    System.out.println(i);
```

```
        }
      }
    }
  }
}
```

Output Verification:



8. Create a program to print the greatest factor of a number beside itself using a loop.

Hint =>

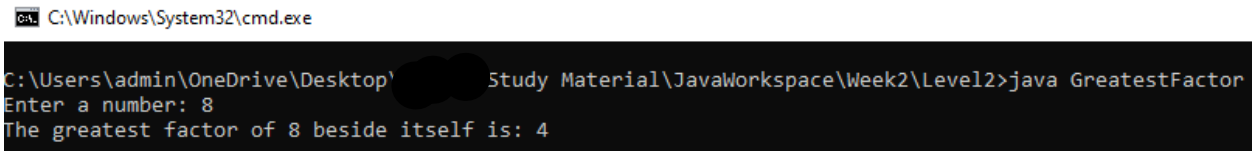
a. Get an integer input and assign it to the number variable. As well as define a greatestFactor variable and assign it to 1
b. Create a ***for*** loop that runs from last but one till 1 as in i = number - 1 to i = 1.
c. Inside the loop, check if the number is perfectly divisible by i then assign i to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

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//display class
public class GreatestFactor {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);//declare scanner object
        // Get an integer input from the user
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();
        // Initialize the greatestFactor variable to 1
        int greatestFactor = 1;
```

```
        // Create a counter variable and assign it to number - 1
        int counter = number - 1;
        // Use a while loop until the counter is greater than 1
        while (counter > 1) {
            // Check if the number is perfectly divisible by the counter
            if (number % counter == 0) {
                // Assign the counter to the greatestFactor variable and break the loop
                greatestFactor = counter;
                break;
            }
            // Decrement the counter
            counter--;
        }
        // Display the greatestFactor variable
        System.out.println("The greatest factor of " + number + " beside itself is: " +
greatestFactor);
    }
}
```

Output Verification:



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

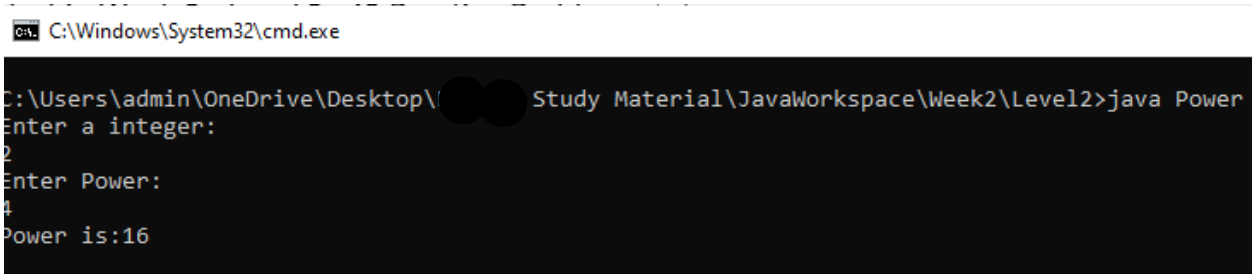
Hint =>

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

Ans)

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Power {
   public static void main(String[] args) {
      int n, i, pow;//declare variable
      int res = 1; // Initialize res to 1 for correct power calculation
      Scanner myObj = new Scanner(System.in);
      // Prompt user to enter an integer
      System.out.println("Enter an integer:");
      n = myObj.nextInt();//store input in variable
      // Prompt user to enter the power
      System.out.println("Enter power:");
      pow = myObj.nextInt();
      // Calculate n raised to the power of pow
      for (i = 1; i <= pow; i++) {
         res *= n; // Multiply res by n in each iteration
      }
      // Display the result
      System.out.println("Power is: " + res);
   }
}
```

Output Verification:



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

Hint =>

a. Get input value for a variable named number.
b. Run a ***for*** loop backwards: from i = 100 to i = 1.
c. Inside the loop, check if i perfectly divides number.
d. If true, print the number and ***continue*** the loop.

Ans) Code:

```
//import java utility scanner
import java.util.Scanner;
//declare class
public class Multiples {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);//declare scanner object
        // Get the input value for the variable named 'number'
        System.out.print("Enter a integer: ");
        int number = scanner.nextInt();
        // Check if the number is a positive integer and less than 100
        if (number > 0 && number < 100) {
            System.out.println("Multiples of " +number+ " below 100:");
            // Use a for loop backwards from i = 100 to i = 1
            for (int i = 100; i >= 1; i--) {
                // Check if 'i' is a multiple of 'number'
                if (i % number == 0) {
                    // If true, print the multiple
                    System.out.println(i);
                }
            }
```

```
        } else {
            // If the number is not valid, print an error message
            System.out.println("Please enter a valid positive integer less than 100.");
        }
    }
}
```

Output Verification: