Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110
NAAC A++
Ph.: 07104-237919, 234623, 329249, 329250 Fax: 07104-232376, Website: www.ycce.edu

Department of Computer Technology

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration.

Mission of the Department

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: Dream of where you want.	Mission: Means to achieve Vision

Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	Preparation	P: Preparation	Pep-CL abbreviation pronounce as Pep-si-lL easy to recall
PEO2	Core Competence	E: Environment (Learning Environment)	
PEO3	Breadth	P: Professionalism	
PEO4	Professionalism	C: Core Competence	
PEO5	Learning Environment	L: Breadth (Learning in diverse areas)	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:

Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

"I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life." *to contribute to the development of cutting-edge technologies and Research*.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Name and Signature of Student and Date
(Signature and Date in Handwritten)
 Nikhil Gourkar

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Session	2024-25 (ODD)	Course Name	Lab : Java Stack
Semester	5	Course Code	CT
Roll No	59	Name of Student	Nikhil Gourkar

Practical Number	1
Course Outcome	Proper Understanding of Basic Java programs covering loops , arrays and conditionals and implementation of programs.
Aim	Implementation of basic Java programs and introduction to OOPS
Problem Definition	1. Problem Statement: Lottery Develop a program to play lottery.the program randomly generates a lottery of a two-digit number,prompts the user to enter a two-digit number, and determines whether the user wins according to the following rules: 1. If the user input matches the lottery number in the exact order, the award is \$10,000. 2. If all digits in the user input match all digits in the lottery number, the award is \$3,000. 3. If one digit in the user input matches a digit in the lottery number ,the award is \$1,000. 2. Problem Statement: Computing Body Mass Index Write a program that promts the user to enter a weight in pounds and height in inches and displays the BMI. * One pound is 0.45359237 kilograms, one inch is 0.0254 meters. 1. It can be calculated by taking your weight in kilograms and dividing it by the square of your height in meters. 2. The interpretation of BMI for people 20 years or older is as follows: <table><tr><td>**BMI**</td><td>**Interpretation**</td></tr><tr><td>BMI<18.5</td><td>Underweight</td></tr><tr><td>18.5<=BMI<25.0</td><td>Normal</td></tr><tr><td>25.0<=BMI<30.0</td><td>Overweight</td></tr><tr><td>30.0<=BMI</td><td>Obese</td></tr></table>

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Theory (100 words)	**Lottery Game Theory:** The lottery program generates a random two-digit number using Java's Random class. The user inputs their guess. Key logic includes: extracting digits using division and modulus, comparing numbers for exact match, checking if both digits match in any order, and verifying if at least one digit matches. Conditional statements determine the prize. **BMI Calculation Theory:** The BMI program first converts weight (pounds → kilograms) and height (inches → meters) using constants. The BMI is computed as weight / (height²). Key logic involves unit conversion, mathematical formula application, and classification interpretation based on BMI ranges.

Procedure and Execution
 	
(100 Words)
	Algorithm:
	1. Lottery Game
	  1. Generate a random number between 10 and 99.
	  2. Ask the user to enter a two-digit number.
	  3. If the guess equals the random number → print "Win $10,000".
	  4. Else if both digits match but in different order → print "Win $3,000".
	  5. Else if any one digit matches → print "Win $1,000".
	  6. Else → print "No match".
	  7. Stop.
	
	2. BMI
	  1. Ask the user for weight in pounds.
	  2. Ask the user for height in inches.
	  3. Convert weight to kilograms (weight * 0.45359237).
	  4. Convert height to meters (height * 0.0254).
	  5. Calculate BMI = weightKg / (heightMeters * heightMeters).
	  6. Show the BMI value.
	  7. Show the category (Underweight, Normal, Overweight, Obese).
	  8. Stop.

	Code:

```
1) import java.util.*;

public class Practical1 {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      Random random = new Random();

      int lottery = 10 + random.nextInt(90); // two-digit random number
      System.out.print("Enter your two-digit number: ");
      int guess = sc.nextInt();

      int l1 = lottery / 10;
      int l2 = lottery % 10;
      int g1 = guess / 10;
```

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```java
        int g2 = guess % 10;

        System.out.println("Lottery number: " + lottery);

        if (guess == lottery) {
            System.out.println("Exact match! Win $10,000");
        } else if (g1 == l2 && g2 == l1) {
            System.out.println("Digits match! Win $3,000");
        } else if (g1 == l1 || g1 == l2 || g2 == l1 || g2 == l2) {
            System.out.println("One digit match! Win $1,000");
        } else {
            System.out.println("No match.");
        }
        sc.close();
    }
}
2) import java.util.*;

public class Practical1b {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter weight in pounds: ");
        double weight = sc.nextDouble();

        System.out.print("Enter height in inches: ");
        double height = sc.nextDouble();

        double weightKg = weight * 0.45359237;
        double heightM = height * 0.0254;
        double bmi = weightKg / (heightM * heightM);

        System.out.printf("BMI: %.2f%n", bmi);

        if (bmi < 18.5) {
            System.out.println("Underweight");
        } else if (bmi < 25) {
            System.out.println("Normal weight");
        } else if (bmi < 30) {
            System.out.println("Overweight");
        } else {
            System.out.println("Obese");
        }
        sc.close();
    }
```

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Output:

```
Enter weight in pounds: 133
Enter height in inches: 74
BMI: 17.08
Underweight
```

```
Enter your two-digit number: 66

Lottery number: 91

No match.
```

Output Analysis	**1. Lottery** When the program runs, it first generates a random two-digit number and asks the user to guess it. If the guess is exactly the same as the lottery number, the highest prize of $10,000 is awarded. If both digits are correct but their positions are reversed, the prize is $3,000. If only one digit matches in any position, the prize is $1,000. If no digits match, the program shows that there is no win. **2. BMI** The program takes the user's weight in pounds and height in inches, converts them to kilograms and meters, and calculates the BMI using the given formula. Based on the result, it classifies the person as underweight, normal weight, overweight, or obese. The classification depends on BMI ranges: less than 18.5 is underweight, 18.5–24.9 is normal, 25–29.9 is overweight, and 30 or above is obese.
Link of student Github profile where lab assignment has	https://github.com/Nikhil07Gourkar/Java-Lab

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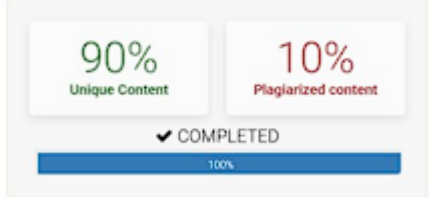Ph.: 07104-237919, 234623, 329249, 329250 Fax: 07104-232376, Website: www.ycce.edu

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Conclusion	In this practical, two different Java programs were developed to apply fundamental programming concepts in real scenarios. The Lottery Game showcased the use of random number generation, digit separation, and conditional logic to evaluate different winning cases. The BMI Calculator demonstrated data input, mathematical calculations, and category classification based on given ranges. Both tasks strengthened skills in user interaction, arithmetic operations, control structures, and logical thinking. This practical proved that by combining basic programming elements, we can create functional applications that are both useful and engaging for end users.
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