**Balam Indira Priyadarsini**

**Bridge course Assignment-Day 2**

**Age Checker:**

**Problem Statement:** Declare an int Variable my Age and assign your age to it.

Write expressions using comparison operators to check if:

* myAge is equal to 25.
* myAge is greater than 18.
* myAge is less than or equal to 65.
* myAge is not equal to 30.

Print the Boolean result of each expression using system.out.println().

**Algorithm:**

1.Start the program.

2. Declare an integer variable myAge.

3. Assign your age (e.g., 22) to the variable.

4. Use the following comparison operators:

* == to check if equal to 25.
* > to check if greater than 18.
* <= to check if less than or equal to 65.
* != to check if not equal to 30.

5 Print the result of each expression using System.out.println().

**Code:**

public class AgeComparison {

public static void main(String[] args) {

int myAge = 22; // Replace 22 with your actual age

System.out.println("Is myAge equal to 25? " + (myAge == 25));

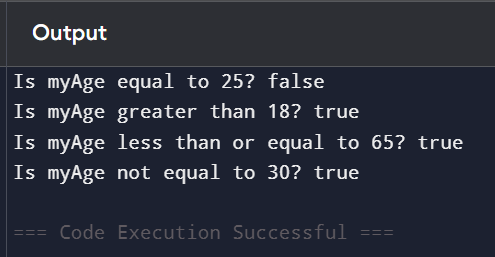
System.out.println("Is myAge greater than 18? " + (myAge > 18));

System.out.println("Is myAge less than or equal to 65? " + (myAge <= 65));

System.out.println("Is myAge not equal to 30? " + (myAge != 30));

}

}



**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **myAge** | **Expected Outputs** |
| TC1 | 25 | true, true, true, true |
| TC2 | 22 | false, true, true, true |
| TC3 | 30 | false, true, true, false |

**Login Credentials**

**Problem Statement:**Declare two String variables: username=”admin” and password=”password123”.

Declare two more variables:enteredUsername and entered password,and assign some test values.

Write a logical expression that returns true only if both username and password match.

**Algorithm:**

1. Start the program.

2. Declare the original username and password.

3. Declare and assign enteredUsername and enteredPassword with test input.

4. Use .equals() method to compare the strings.

5. Check if both username and password match using logical AND (&&) operator.

6. Print the result.

**Code:**

public class LoginCheck {

public static void main(String[] args) {

String username = "admin";

String password = "password123";

String enteredUsername = "admin";

String enteredPassword = "password123";

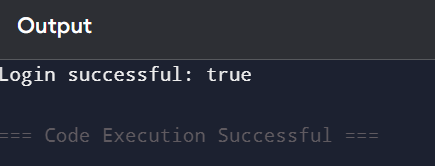
boolean isAuthenticated = username.equals(enteredUsername) && password.equals(enteredPassword);

System.out.println("Login successful: " + isAuthenticated);

}

}

**Output:**

****

**Testcases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Case** | **enteredUsername** | **enteredPassword** | **Expected Output** |
| TC1 | admin | password123 | Login successful :true |
| TC2 | Admin | password123 | Login successful:false |

**Number Range**

**Problem Statement:**Declare an int variable num and assign it a value

Check whether num is:

* Greater than 10 AND less than 20.
* Less than 5 OR greater than 100.

Print the results

**Algorithm:**

1. Start the program.

2. Declare an integer variable num and assign a value.

3. Use a logical AND (&&) to check if num > 10 && num < 20.

4. Use a logical OR (||) to check if num < 5 || num > 100.

5. Print the results using System.out.println().

**Code:**

public class NumberCheck {

public static void main(String[] args) {

int num = 15; // You can change this value to test other cases

boolean condition1 = (num > 10 && num < 20);

boolean condition2 = (num < 5 || num > 100);

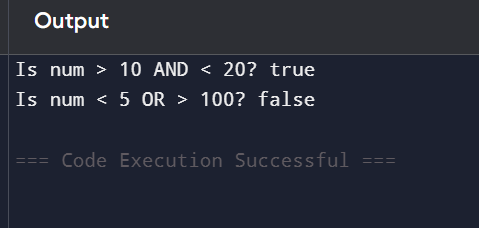
System.out.println("Is num > 10 AND < 20? " + condition1);

System.out.println("Is num < 5 OR > 100? " + condition2);

}

}

**Output:**

**Testcases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Testcase** | **Num values** | **Expected output for AND** | **Expected output for OR** |
| **Tc1** | **15** | **True** | **False** |
| **Tc2** | **10** | **False** | **False** |
| **Tc1** | **20** | **false** | **false** |

**Operator Precedence Challenge**

**Problem Statement:** Given the expression:5+3\*2>10&&!(7==7)

Break it down step-by-step

Show the result after each stage of the operation and determine its final Boolean value.

**Algorithm:**

1. Start.
2. Evaluate arithmetic inside the expression:
   * First, perform 3 \* 2 (multiplication has higher precedence).
   * Then add 5.
3. Evaluate the relational operation: 5 + 3 \* 2 > 10.
4. Evaluate equality 7 == 7, then negate it with !.
5. Combine both Boolean results using logical AND &&.
6. Print the final result.

**Code:**

public class ExpressionEvaluation {

public static void main(String[] args) {

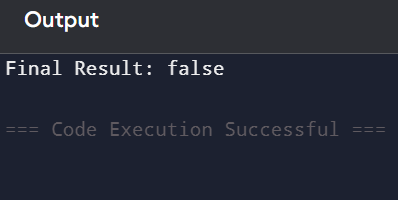
boolean result = 5 + 3 \* 2 > 10 && !(7 == 7);

System.out.println("Final Result: " + result);

}

}

**Output:**



**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Expression** | **Expected Result** | **Explanation** |
| 5 + 3 \* 2 >=11 && !(7 != 7 | true | true && true |
| 5 + 3 \* 2 > 10 && !(7 == 7) | false | true && false |

**Positive,Negative,or Zero**

**Problem Statement:** Get an integer input from the user using Scanner.

Write an if-else if-else structure that:

* Print”Positive” if the number is greater than 0
* Print “Negative”if the number is less than 0.
* Prints”Zero”if the numbr is exactly 0.

**Algorithm:**

1. Start the program.

2. Import and use the Scanner class to get input from the user.

3. Store the input in an integer variable.

4. Use if-else if-else to:

* Check if number > 0 → print "Positive"
* Else if number < 0 → print "Negative"
* Else → print "Zero"

5. End.

**Code:**

import java.util.Scanner;

public class NumberSign {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number: ");

int number = scanner.nextInt();

if (number > 0) {

System.out.println("Positive");

} else if (number < 0) {

System.out.println("Negative");

} else {

System.out.println("Zero");

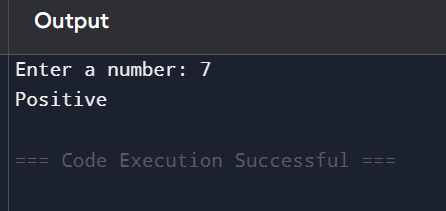
}

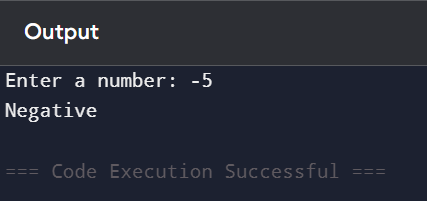
scanner.close();

}

}

**Output:**

****

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Input** | **Expected Output** |
| TC1 | 7 | Positive |
| TC2 | -5 | Negative |
| TC3 | 0 | Zero |

**Driving Eligibility**

**Problem Statement**:Ask the user to input their age.

Use an if-else structure to determine if they are eligible to drive (age>=18).

**Algorithm:**

1. Start the program.

2. Ask the user to enter their age.

3. Store the input in an integer variable (e.g., age).

4. Use an if-else statement:

* If age >= 18, print “You are eligible to drive.”
* Else, print “You are not eligible to drive.”

5. End.

**Code:**

import java.util.Scanner;

public class candrivevehhicle {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter your age: ");

int age = scanner.nextInt();

if (age >= 18) {

System.out.println("You are eligible to drive.");

} else {

System.out.println("You are not eligible to drive.");

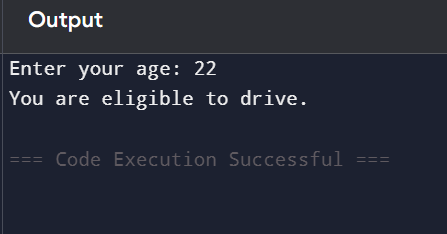
}

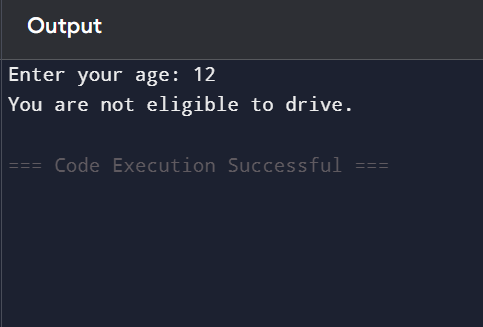
scanner.close();

}

}

**Output:**

****

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Input Age** | **Expected Output** |
| TC1 | 22 | You are eligible to drive |
| TC2 | 12 | You are not eligible to drive |
| TC3 | 8 | You are not eligible to drive |

**Simple Calculator**

**Problem Statement:** Get two double inputs and an operator(+,-,\*, /)from the user

Use if-else if-else to perform the operation

Handle division by zero using an if check

**Algorithm:**

1. Start the program.
2. Create a Scanner object to read user input.
3. Ask the user to input:
   * First number (double)
   * Second number (double)
   * Operator (char or String)
4. Use if-else if-else structure to:
   * Add if operator is +
   * Subtract if operator is -
   * Multiply if operator is \*
   * Divide if operator is /, **but first check if the second number is zero**
5. If the operator is invalid, show an error message.
6. Print the result.
7. End the program.

**Code:**

import java.util.Scanner;

public class SimpleCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter first number: ");

double num1 = scanner.nextDouble();

System.out.print("Enter second number: ");

double num2 = scanner.nextDouble();

System.out.print("Enter an operator (+, -, \*, /): ");

char operator = scanner.next().charAt(0);

double result;

if (operator == '+') {

result = num1 + num2;

System.out.println("Result: " + result);

} else if (operator == '-') {

result = num1 - num2;

System.out.println("Result: " + result);

} else if (operator == '\*') {

result = num1 \* num2;

System.out.println("Result: " + result);

} else if (operator == '/') {

if (num2 == 0) {

System.out.println("Error: Division by zero is not allowed.");

} else {

result = num1 / num2;

System.out.println("Result: " + result);

}

} else {

System.out.println("Invalid operator!");

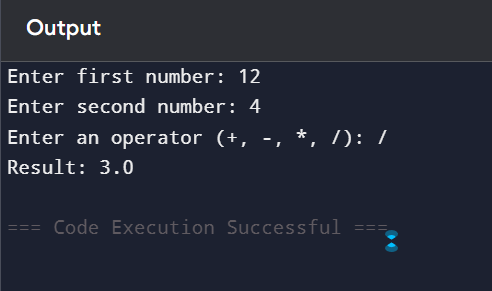
}

scanner.close();

}

}

**Output:**

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Input (num1, num2, operator)** | **Expected Output** |
| TC1 | 12,4,/ | Result:3.0 |
| TC2 | 7,2,\* | Result:14 |
| TC3 | 10.5,4.5,- | Result:6.0 |

**Movie Ticket Price**

**Problem Statement:**Get user age (int) and student status (Boolean)

Use nested if or logical operators to determine:

* If under 5 or over 65:$5
* If 5-18 and student:$8
* Otherwise:$12

Print the result.

**Algorithm:**

1. Start the program.

2. Prompt the user to enter their **age**.

3. Prompt the user to enter their **student status** (true/false).

4. Use if-else if-else or logical conditions to determine:

* If age < 5 **or** age > 65 → Print $5
* Else if age between 5 and 18 **and** student is true → Print $8
* Else → Print $12

5. Print the final fare.

6. End the program.

**Code:**

import java.util.Scanner;

public class TicketFareCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter your age: ");

int age = scanner.nextInt();

System.out.print("Are you a student? (true/false): ");

boolean isStudent = scanner.nextBoolean();

int fare;

if (age < 5 || age > 65) {

fare = 5;

} else if (age >= 5 && age <= 18 && isStudent) {

fare = 8;

} else {

fare = 12;

}

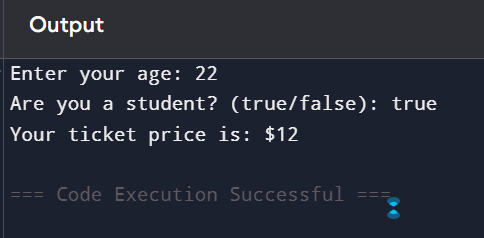
System.out.println("Your ticket price is: $" + fare);

scanner.close();

}

}

**Output:**

****

**Testcases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Case** | **Age** | **Student** | **Expected Fare** |
| TC1 | 22 | true | $12 |
| TC2 | 3 | false | $5 |
| TC3 | 70 | True | $5 |

**Day of the week**

**Problem Statement:**Ask the user to input an integer from 1-7

Use a switch statement to print the correstponding day.

Include a default case for invalid inputs

**Algorithm:**

1. Start the program.
2. Prompt the user to enter an integer (1 to 7).
3. Read the input using Scanner.
4. Use a switch statement:
   * 1 → Sunday
   * 2 → Monday
   * 3 → Tuesday
   * 4 → Wednesday
   * 5 → Thursday
   * 6 → Friday
   * 7 → Saturday
   * default → Invalid input
5. Print the corresponding day.
6. End.

**Code:**

import java.util.Scanner;

public class DayOfWeekSwitch {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number (1 to 7): ");

int day = scanner.nextInt();

switch (day) {

case 1:

System.out.println("Sunday");

break;

case 2:

System.out.println("Monday");

break;

case 3:

System.out.println("Tuesday");

break;

case 4:

System.out.println("Wednesday");

break;

case 5:

System.out.println("Thursday");

break;

case 6:

System.out.println("Friday");

break;

case 7:

System.out.println("Saturday");

break;

default:

System.out.println("Invalid input. Please enter a number from 1 to 7.");

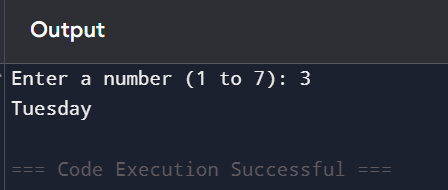
}

scanner.close();

}

}

**Output:**

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Input** | **Expected Output** |
| TC1 | 3 | Tuesday |
| TC2 | 4 | Sunday |
| TC3 | 7 | Wednesday |

**Simple Menu Selection**

**Problem Statement:**Simulate an ATM

Get user input:1=check Balance,2=Withdraw,3=Deposit,4=Exit

Use switch to print the action

Handle invalid input with a default case

**Algorithm:**

1. Start the program.

2. Display ATM menu options to the user.

3. Prompt the user to enter a choice (1 to 4).

4. Use a switch statement:

* Case 1: Print “Balance: $1000” (dummy value)
* Case 2: Print “Enter amount to withdraw”
* Case 3: Print “Enter amount to deposit”
* Case 4: Print “Thank you for using the ATM.”
* Default: Print “Invalid selection”

5. End.

**Code:**

import java.util.Scanner;

public class ATMSimulator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Welcome to the ATM");

System.out.println("1. Check Balance");

System.out.println("2. Withdraw");

System.out.println("3. Deposit");

System.out.println("4. Exit");

System.out.print("Enter your choice (1-4): ");

int choice = scanner.nextInt();

switch (choice) {

case 1:

System.out.println("Balance: $1000");

break;

case 2:

System.out.println("Enter amount to withdraw.");

break;

case 3:

System.out.println("Enter amount to deposit.");

break;

case 4:

System.out.println("Thank you for using the ATM.");

break;

default:

System.out.println("Invalid selection. Please choose between 1 and 4.");

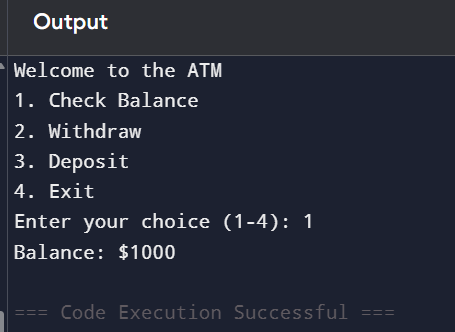
}

scanner.close();

}

}

**Output:**

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Input** | **Expected Output** |
| TC1 | 1 | Balance:$1000 |
| TC2 | **2** | Enter amount to withdraw. |

**Grade Remarks (why switch is not ideal)\*\*is not ideal**

**Problem Statement:**Input score(0-100).

Use if-else if-else to print:

* 90-100:”Excellent”
* 80-89:”very Good”
* 70-79:”Good”
* 60-69:”Pass”
* Below 60:”Fail”

Explain why switch would not be appropriate here.

**Algorithm:**

1. Start the program.
2. Prompt the user to enter a score (0 to 100).
3. Read the score as an integer.
4. Use if-else if-else to check:
   * If score is between 90 and 100 → print “Excellent”
   * Else if between 80 and 89 → print “Very Good”
   * Else if between 70 and 79 → print “Good”
   * Else if between 60 and 69 → print “Pass”
   * Else → print “Fail”
5. End.

**Code:**

import java.util.Scanner;

public class ScoreEvaluator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter your score (0-100): ");

int score = scanner.nextInt();

if (score >= 90 && score <= 100) {

System.out.println("Excellent");

} else if (score >= 80 && score <= 89) {

System.out.println("Very Good");

} else if (score >= 70 && score <= 79) {

System.out.println("Good");

} else if (score >= 60 && score <= 69) {

System.out.println("Pass");

} else if (score >= 0 && score < 60) {

System.out.println("Fail");

} else {

System.out.println("Invalid score. Please enter a value between 0 and 100.");

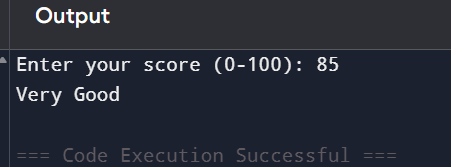
}

scanner.close();

}

}

**Output:**

****

**Testcases:**

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Score** | **Expected Output** |
| TC1 | 85 | Very Good |
| TC2 | 95 | Excellent |
| TC3 | 50 | Fail |