Chapter 8 – Conditional Constructs in Java

Practice Questions with Answers

A. Tick (✓) the Correct Answer

1. An if statement code must be defined in between two braces.
a) true
b) false
c) may or may not ✓
d) none of these

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2. In Java, if statement is a-------Statement.
a) Boolean
b) Conditional ✓
c) Iterative
d) Optional

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3. Choose the correct syntax of Java IF statement below.
a) if(condition) //statement ✓
b) if(condition): //statement
c) if(condition) //statement1 else //statement2
d) All

---

4. What is the output of the program?

```
if (true)
   System.out.println("Yes");
else
   System.out.println("No");
```

a) No
b) Yes ✓
c) Both
d) None of these

---

5. What is the output of the Java program?

```
double a = 15.4;
if (a > 15)
   System.out.println("India");
   System.out.println("New Delhi");
else
```

```
   System.out.println("All");
```

a) India New Delhi ✓
b) IndiaNew Delhi
c) Error: else without if
d) All of these

---

6. Find the output of program:

```
float marks = 89.5f;
if (marks > 89.5)
   System.out.println("Grade A");
else
   System.out.println("Grade B");
```

a) Grade A
b) Grade B ✓
c) Error – else without if
d) All of these

---

7. In Java, what statement is alternative to Switch Case?
a) break
b) for
c) if-else ✓
d) continue

---

8. What is the output of the program below?

```
int a = 2;
switch(a) {
   case 1: System.out.print("Tiger");
   case 2: System.out.print("Deer");
   default: System.out.println("Lion");
}
```

a) Tiger
b) Lion
c) DeerLion ✓
d) No output

---

9. If ____ is not present in a switch case, then fall through occurs in Java.
a) case
b) default
c) break ✓
d) None of these

---

10. In Java, instead of if-else, the ____ operator may be used.
a) if-else-if statement
b) if-else statement ✓
c) if statement
d) Both a and b

B. Fill in the Blanks

1. Java Ternary Operators are also called **conditional operators**.
2. Absence of **break** in switch statement is known as **Fall Through**.
3. One example of **multiple branching** statement is **switch-case**.
4. In if-else-if, default statement of switch case will be written in the **else statement**.
5. The output of if-else is always a **boolean datatype** (condition evaluates to true/false).

C. More Unsolved Programs (for Practice)

Programs Using Conditional Flow of Control

(a) Pen Price Discount or Gift

```
import java.util.Scanner;
class PenCompany {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter price of the pen: ");
        int price = sc.nextInt();

        if(price < 500)
            System.out.println("Gift will be given.");
        else
            System.out.println("Discounted Price = " + (price - (price * 25 /
100.0)));
    }
}
```

(b) Odd or Even

```
import java.util.Scanner;
class OddEven {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int n = sc.nextInt();

        if(n % 2 == 0)
            System.out.println("Even Number");
        else
            System.out.println("Odd Number");
    }
}
```

(c) Valid Triangle Check

```
import java.util.Scanner;
class TriangleCheck {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter 3 angles: ");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();

        if(a + b + c == 180)
            System.out.println("It is a Triangle");
        else
            System.out.println("Not a Triangle");
    }
}
```

(d) Weekday Name

```
import java.util.Scanner;
class Weekday {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number (1-7): ");
        int day = sc.nextInt();

        if(day == 1) System.out.println("Sunday");
        else if(day == 2) System.out.println("Monday");
        else if(day == 3) System.out.println("Tuesday");
        else if(day == 4) System.out.println("Wednesday");
        else if(day == 5) System.out.println("Thursday");
        else if(day == 6) System.out.println("Friday");
        else if(day == 7) System.out.println("Saturday");
        else System.out.println("Invalid Input");
    }
}
```

(e) Square/Cube of Numbers

```
import java.util.Scanner;
class SquareCube {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter two numbers: ");
        int a = sc.nextInt();
        int b = sc.nextInt();

        if(a > b)
            System.out.println("Square of greater: " + (a * a) + ", Cube of
smaller: " + (b * b * b));
        else if(b > a)
            System.out.println("Square of greater: " + (b * b) + ", Cube of
smaller: " + (a * a * a));
        else
            System.out.println("Both Equal. Twice = " + (2 * a));
    }
}
```

(f) Student Grade

```
import java.util.Scanner;
class StudentGrade {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter marks of 3 subjects: ");
        int m1 = sc.nextInt(), m2 = sc.nextInt(), m3 = sc.nextInt();

        int avg = (m1 + m2 + m3) / 3;
        System.out.println("Average = " + avg);

        if(avg >= 90) System.out.println("Grade A");
        else if(avg >= 80) System.out.println("Grade B");
        else if(avg >= 70) System.out.println("Grade C");
        else if(avg >= 60) System.out.println("Grade D");
        else System.out.println("Grade F");
    }
}
```

(g) Purchase Discount

```
import java.util.Scanner;
class Purchase {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter customer name: ");
        String name = sc.nextLine();
        System.out.print("Enter purchase amount: ");
        double amt = sc.nextDouble();

        double discount = 0;
        if(amt < 3000) discount = 0.05 * amt;
        else if(amt >= 5000) discount = 0.10 * amt;

        double finalAmt = amt - discount;
        System.out.println("Customer: " + name);
        System.out.println("Discount = " + discount);
        System.out.println("Final Amount = " + finalAmt);
    }
}
```

(h) Mode of Payment

```
import java.util.Scanner;
class PaymentMode {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter bill amount: ");
        double amt = sc.nextDouble();
        System.out.print("Enter mode of payment (cc/dc/ew/c): ");
        String mode = sc.next();

        if(mode.equals("cc")) {
            amt -= amt * 0.015;
            System.out.println("Credit Card: 1.5% discount. Payable = " + amt);
        } else if(mode.equals("dc")) {
            amt -= 10;
            System.out.println("Debit Card: Rs.10 cashback. Payable = " + amt);
        } else if(mode.equals("ew")) {
            amt -= 20;
            System.out.println("E-Wallet: Rs.20 cashback. Payable = " + amt);
        } else if(mode.equals("c")) {
            System.out.println("Cash: No discount. Payable = " + amt);
```

```
        } else {
            System.out.println("Invalid Mode");
        }
    }
}
```

(i) Telephone Bill

```
import java.util.Scanner;
class TelephoneBill {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of calls: ");
        int calls = sc.nextInt();

        double bill = 100;
        if(calls > 50) {
            int rem = calls - 50;
            if(rem <= 50) bill += rem * 0.80;
            else if(rem <= 150) bill += (50 * 0.80) + (rem - 50) * 0.60;
            else bill += (50 * 0.80) + (100 * 0.60) + (rem - 150) * 0.40;
        }
        System.out.println("Telephone Bill = Rs." + bill);
    }
}
```

(j) Sales Commission

```
import java.util.Scanner;
class SalesCommission {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of products sold: ");
        int n = sc.nextInt();
        System.out.print("Enter selling amount: ");
        double amt = sc.nextDouble();

        if(n <= 50)
            System.out.println("Commission = " + (0.05 * amt) + " on Parker Pen");
        else if(n <= 75)
            System.out.println("Commission = " + (0.075 * amt) + " on Micro SD
Card");
        else if(n <= 100)
            System.out.println("Commission = " + (0.10 * amt) + " on Mobile");
        else
            System.out.println("Commission = " + (0.15 * amt) + " on Laptop");
    }
}
```

(k) Income Tax

```
import java.util.Scanner;
class IncomeTax {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter annual taxable income: ");
        double income = sc.nextDouble();
        double tax = 0;

        if(income <= 100000) tax = 0;
```

```
        else if(income <= 150000) tax = (income - 100000) * 0.10;
        else if(income <= 250000) tax = 5000 + (income - 150000) * 0.20;
        else tax = 25000 + (income - 250000) * 0.30;

        System.out.println("Tax Payable = Rs." + tax);
    }
}
```

(l) Vowel or Consonant

```
import java.util.Scanner;
class VowelCheck {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a character: ");
        char ch = sc.next().charAt(0);

        if("aeiouAEIOU".indexOf(ch) != -1)
            System.out.println("Vowel");
        else
            System.out.println("Consonant");
    }
}
```

✅ 2. Programs Using Multiple Branching (Switch/If-Else)

(a) Volume Calculations

```
import java.util.Scanner;
class VolumeMenu {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. Sphere\n2. Cylinder\n3. Cone");
        System.out.print("Enter choice: ");
        int ch = sc.nextInt();

        switch(ch) {
            case 1:
                System.out.print("Enter radius: ");
                double r = sc.nextDouble();
                System.out.println("Volume of Sphere = " + (4.0/3 * Math.PI * r * r
* r));
                break;
            case 2:
                System.out.print("Enter radius & height: ");
                r = sc.nextDouble();
                double h = sc.nextDouble();
                System.out.println("Volume of Cylinder = " + (Math.PI * r * r *
h));
                break;
            case 3:
                System.out.print("Enter radius & height: ");
                r = sc.nextDouble();
                h = sc.nextDouble();
                System.out.println("Volume of Cone = " + (Math.PI * r * r * h /
3));
                break;
            default:
```

```
                System.out.println("Invalid Choice");
        }
    }
}
```

(b) Temperature Conversion

```
import java.util.Scanner;
class TempConvert {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. F to C\n2. C to F");
        System.out.print("Enter choice: ");
        int ch = sc.nextInt();

        switch(ch) {
            case 1:
                System.out.print("Enter F: ");
                double f = sc.nextDouble();
                System.out.println("Celsius = " + ((f - 32) * 5/9));
                break;
            case 2:
                System.out.print("Enter C: ");
                double c = sc.nextDouble();
                System.out.println("Fahrenheit = " + ((c * 9/5) + 32));
                break;
            default:
                System.out.println("Invalid choice");
        }
    }
}
```

(c) Prime or Factorial

```
import java.util.Scanner;
class PrimeFactorial {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. Prime Check\n2. Factorial");
        System.out.print("Enter choice: ");
        int ch = sc.nextInt();
        System.out.print("Enter number: ");
        int n = sc.nextInt();

        switch(ch) {
            case 1:
                boolean prime = true;
                if(n < 2) prime = false;
                for(int i=2;i<=n/2;i++)
                    if(n%i==0) {prime=false; break;}
                if(prime) System.out.println("Prime");
                else System.out.println("Not Prime");
                break;
            case 2:
                int fact = 1;
                for(int i=1;i<=n;i++) fact*=i;
                System.out.println("Factorial = " + fact);
                break;
            default:
                System.out.println("Invalid");
        }
    }
```

```
}
```

(d) Math Operations Menu

```
import java.util.Scanner;
class MathMenu {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. Square root of 9\n2. Absolute value of 126.4\n3.
Smallest integer > 56.7\n4. Random number between 0-1");
        System.out.print("Enter choice: ");
        int ch = sc.nextInt();

        switch(ch) {
            case 1: System.out.println("sqrt(9) = " + Math.sqrt(9)); break;
            case 2: System.out.println("abs(126.4) = " + Math.abs(126.4)); break;
            case 3: System.out.println("ceil(56.7) = " + Math.ceil(56.7)); break;
            case 4: System.out.println("Random = " + Math.random()); break;
            default: System.out.println("Invalid");
        }
    }
}
```

(e) Area Calculations

```
import java.util.Scanner;
class AreaMenu {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. Rectangle\n2. Square\n3. Circle");
        System.out.print("Enter choice: ");
        int ch = sc.nextInt();

        switch(ch) {
            case 1:
                System.out.print("Enter length & breadth: ");
                int l = sc.nextInt(), b = sc.nextInt();
                System.out.println("Area of Rectangle = " + (l*b));
                break;
            case 2:
                System.out.print("Enter side: ");
                int s = sc.nextInt();
                System.out.println("Area of Square = " + (s*s));
                break;
            case 3:
                System.out.print("Enter radius: ");
                double r = sc.nextDouble();
                System.out.println("Area of Circle = " + (Math.PI*r*r));
                break;
            default:
                System.out.println("Invalid");
        }
    }
}
```