

ASSIGNMENT-2

1. Arithmetic & Assignment Operators

Q1: Write a program to swap two numbers without using a third variable and without using arithmetic operators like + or - . Hint : Use bitwise XOR ^ operator.

```
-----
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
swapXOR.java
1  import java.util.Scanner;
2
3  public class SwapXOR {
4      public static void swapNumbers(int a, int b) {
5          a = a ^ b;
6          b = a ^ b;
7          a = a ^ b;
8
9          System.out.println("After swapping: x = " + a + ", y = " + b);
10     }
11
12     public static void main(String[] args) {
13         Scanner scanner = new Scanner(System.in);
14         System.out.print("Enter two numbers: ");
15         int x = scanner.nextInt();
16         int y = scanner.nextInt();
17         scanner.close();
18
19         System.out.println("Before swapping: x = " + x + ", y = " + y);
20         swapNumbers(x, y);
21     }
22 }
23
```

```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22621.4317]
(c) Microsoft Corporation. All rights reserved.

C:\Users\waghu\OneDrive\Documents\Java test>javac SwapXOR.java

C:\Users\waghu\OneDrive\Documents\Java test>java SwapXOR
Enter two numbers: 80

50
Before swapping: x = 80, y = 50
After swapping: x = 50, y = 80

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q2: Write a program to check whether a given number is even or odd using only bitwise operators . Hint : Use $n \& 1$ to check.

```
EvenOddBitwise.java X
1 import java.util.Scanner;
2
3 public class EvenOddBitwise {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter a number: ");
7         int n = scanner.nextInt();
8         scanner.close();
9
10        if ((n & 1) == 0) {
11            System.out.println(n + " is Even");
12        } else {
13            System.out.println(n + " is Odd");
14        }
15    }
16 }
17
```

```
C:\Windows\system32\cmd.e: X + v

C:\Users\waghu\OneDrive\Documents\Java test>javac EvenOddBitwise.java

C:\Users\waghu\OneDrive\Documents\Java test>java EvenOddBitwise
Enter a number: 50
50 is Even

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q3: Implement a program that calculates the sum of digits of an integer using modulus (%) and division (/) operators .

```
---

SumofDigits.java x
1  import java.util.Scanner;
2
3  public class SumOfDigits {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int n = scanner.nextInt();
8          scanner.close();
9
10         int sum = 0;
11         while (n != 0) {
12             sum += n % 10;
13             n /= 10;
14         }
15
16         System.out.println("Sum of digits: " + sum);
17     }
18 }
```

```
C:\Windows\system32\cmd.exe X
C:\Users\waghu\OneDrive\Documents\Java test>javac SumOfDigits.java

C:\Users\waghu\OneDrive\Documents\Java test>java SumOfDigits
Enter a number: 56
Sum of digits: 11

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q4: Write a program to find whether a given number is divisible by 3 without using the modulus (%) or division (/) operators. Hint : Use subtraction and bitwise shifts.

```
-----
Divisible.java
1  import java.util.Scanner;
2
3  public class Divisible {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int n = scanner.nextInt();
8          scanner.close();
9
10         int sum = 0;
11         int num = Math.abs(n); // Work with positive numbers
12
13         while (num > 0) {
14             sum += num & 1; // Add last bit
15             num >>= 1; // Right shift to remove last bit
16             sum += num & 1; // Add new last bit
17             num >>= 1; // Right shift again
18         }
19
20         if (sum == 0 || sum % 3 == 0) {
21             System.out.println(n + " is divisible by 3");
22         } else {
23             System.out.println(n + " is not divisible by 3");
24         }
25     }
26 }
27
```

```
C:\Windows\system32\cmd.e: X + v

C:\Users\waghu\OneDrive\Documents\Java test>javac Divisible.java

C:\Users\waghu\OneDrive\Documents\Java test>java Divisible
Enter a number: 89
89 is not divisible by 3

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q5: Write a Java program to swap two numbers using the += and -= operators only.

```
-----
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Swap.java
1 import java.util.Scanner;
2
3 public class Swap {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter two numbers: ");
7         int a = scanner.nextInt();
8         int b = scanner.nextInt();
9         scanner.close();
10
11         System.out.println("Before swapping: a = " + a + ", b = " + b);
12
13         a += b;
14         b = a - b;
15         a -= b;
16
17         System.out.println("After swapping: a = " + a + ", b = " + b);
18     }
19 }
```

```
C:\Users\waghu\OneDrive\Documents\Java test>javac Swap.java

C:\Users\waghu\OneDrive\Documents\Java test>java Swap
Enter two numbers: 45
63
Before swapping: a = 45, b = 63
After swapping: a = 63, b = 45

C:\Users\waghu\OneDrive\Documents\Java test>
```

2. Relational & Logical Operators

Q6: Write a program to find the largest of three numbers using only the ternary operator (? :).

```
-----
ThreeNumbers.java
1  import java.util.Scanner;
2
3  public class ThreeNumbers {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter three numbers: ");
7          int x = scanner.nextInt();
8          int y = scanner.nextInt();
9          int z = scanner.nextInt();
10         int largest = (x > y) ? ((x > z) ? x : z) : ((y > z) ? y : z);
11         System.out.println("Largest number: " + largest);
12         scanner.close();
13     }
14 }
15
16 }
```

```
C:\Users\waghu\OneDrive\Documents\Java test>javac ThreeNumbers.java

C:\Users\waghu\OneDrive\Documents\Java test>java ThreeNumbers
Enter three numbers: 12 50 78
Largest number: 78

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q7: Implement a Java program that checks whether a given year is a leap year or not using logical (&& , ||) operators .

```
---
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window
ThreeNumbers.java LeapYear.java
1 import java.util.Scanner;
2
3 public class LeapYear {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter a year: ");
7         int year = scanner.nextInt();
8         boolean isLeap = (year % 400 == 0) || (year % 4 == 0 && year % 100 != 0);
9         System.out.println(year + " is " + (isLeap ? "a Leap Year" : "not a Leap Year"));
10        scanner.close();
11    }
12
13 }
14 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac LeapYear.java
C:\Users\waghu\OneDrive\Documents\Java test>java LeapYear
Enter a year: 2022
2022 is not a Leap Year
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q8: Write a program that takes three boolean inputs and prints true if at least two of them are true . Hint : Use logical operators (&& , ||).


```
---
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window
ThreeNumbers.java LeapYear.java Boolean.java x
1 import java.util.Scanner;
2
3 public class Boolean {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter three boolean values (true/false): ");
7         boolean b1 = scanner.nextBoolean();
8         boolean b2 = scanner.nextBoolean();
9         boolean b3 = scanner.nextBoolean();
10        boolean atLeastTwoTrue = (b1 && b2) || (b1 && b3) || (b2 && b3);
11        System.out.println("At least two true: " + atLeastTwoTrue);
12        scanner.close();
13    }
14
15 }
16 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac Boolean.java
C:\Users\waghu\OneDrive\Documents\Java test>java Boolean
Enter three boolean values (true/false): true false false
At least two true: false
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q9: Implement a Java program that checks if a number is within a specific range (20 to 50) without using if-else . Hint : Use logical AND (&&) in a print statement

```
---  
Range.java  
1  import java.util.Scanner;  
2  
3  public class Range {  
4      public static void main(String[] args) {  
5          Scanner scanner = new Scanner(System.in);  
6          System.out.print("Enter a number: ");  
7          int num = scanner.nextInt();  
8          System.out.println("Is within range (20 to 50): " + (num >= 20 && num <= 50));  
9  
10         scanner.close();  
11     }  
12  
13 }  
14 }
```

```
C:\Users\waghu\OneDrive\Documents\Java test>javac Range.java  
  
C:\Users\waghu\OneDrive\Documents\Java test>java Range  
Enter a number: 16 60  
Is within range (20 to 50): false  
  
C:\Users\waghu\OneDrive\Documents\Java test>
```

. Q10: Write a program to determine if a character is a vowel or a consonant using the ternary operator.

```
----
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
TernaryVowel.java
1 import java.util.Scanner;
2
3 public class TernaryVowel {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter a character: ");
7         char ch = scanner.next().charAt(0);
8         String result = ("AEIOUaeiou".indexOf(ch) != -1) ? "Vowel" : "Consonant";
9         System.out.println(ch + " is a " + result);
10        scanner.close();
11    }
12
13 }
14 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac TernaryVowel.java
C:\Users\waghu\OneDrive\Documents\Java test>java TernaryVowel
Enter a character: k
k is a Consonant
C:\Users\waghu\OneDrive\Documents\Java test>java TernaryVowel
Enter a character: a
a is a Vowel
C:\Users\waghu\OneDrive\Documents\Java test>
```

3. Bitwise Operators

Q11: Write a program to check if a given number is a power of 2 using bitwise operators. Hint : $n \& (n - 1) == 0$ for positive numbers.

```
---
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Bitwiseoperator.java
1 import java.util.Scanner;
2
3 public class Bitwiseoperator {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter a number: ");
7         int n = scanner.nextInt();
8         boolean isPowerOfTwo = (n > 0) && ((n & (n - 1)) == 0);
9         System.out.println(n + " is " + (isPowerOfTwo ? "a power of 2" : "not a power of 2"));
10        scanner.close();
11    }
12 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac Bitwiseoperator.java
C:\Users\waghu\OneDrive\Documents\Java test>java Bitwiseoperator
Enter a number: 15
15 is not a power of 2
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q12: Write a Java program to multiply a number by 8 without using * or / operators. Hint : Use bitwise left shift (<<).

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\Multiply.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Multiply.java
1  import java.util.Scanner;
2
3  public class Multiply {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int num2 = scanner.nextInt();
8          int multiplied = num2 << 3;
9          System.out.println("Result after multiplying by 8: " + multiplied);
10
11         scanner.close();
12     }
13 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac Multiply.java
C:\Users\waghu\OneDrive\Documents\Java test>java Multiply
Enter a number: 69
Result after multiplying by 8: 552
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q13: Implement a Java program to find the absolute value of an integer using bitwise operators. Hint : mask = num >> 31; abs = (num + mask) ^ mask;

```
----
C:\Users\waghu\OneDrive\Documents\Java test\AbsoluteValue.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
AbsoluteValue.java
1  import java.util.Scanner;
2
3  public class AbsoluteValue {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int num2 = scanner.nextInt();
8          int multiplied = num2 << 3;
9          System.out.println("Result after multiplying by 8: " + multiplied);
10
11         scanner.close();
12     }
13 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac AbsoluteValue.java
C:\Users\waghu\OneDrive\Documents\Java test>java AbsoluteValue
Enter a number: 15
Result after multiplying by 8: 120
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q14: Write a program to count the number of 1s (set bits) in a binary representation of a number using bitwise operations. Hint : Use $n \& (n - 1)$.

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\Binary.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Binary.java
1  import java.util.Scanner;
2
3  public class Binary {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int num4 = scanner.nextInt();
8          int count = 0;
9          while (num4 > 0) {
10             num4 &= (num4 - 1);
11             count++;
12         }
13         System.out.println("Number of 1s in binary: " + count);
14
15         scanner.close();
16     }
17 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac Binary.java

C:\Users\waghu\OneDrive\Documents\Java test>java Binary
Enter a number: 56
Number of 1s in binary: 3

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q15: Implement a program to swap odd and even bits of a number using bitwise operators. Hint : Use masks: $(x \& 0xAAAAAAAA) \gg 1 \mid (x \& 0x55555555) \ll 1$

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\Swap1.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Swap1.java
1 import java.util.Scanner;
2
3 public class swap1 {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.print("Enter a number: ");
7         int num5 = scanner.nextInt();
8         int swappedBits = ((num5 & 0xAAAAAAAA) >> 1) | ((num5 & 0x55555555) << 1);
9         System.out.println("Number after swapping odd and even bits: " + swappedBits);
10
11         scanner.close();
12     }
13 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac swap1.java
C:\Users\waghu\OneDrive\Documents\Java test>java swap1
Enter a number: 58
Number after swapping odd and even bits: 53
C:\Users\waghu\OneDrive\Documents\Java test>
```

4. Ternary Operator Challenges

Q16: Write a program that determines whether a given number is positive, negative, or zero using only the ternary operator .

```
---
C:\Users\waghu\OneDrive\Documents\Java test\PositiveNegative.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
PositiveNegative.java
1  import java.util.Scanner;
2
3  public class PositiveNegative {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          System.out.print("Enter a number: ");
7          int num = scanner.nextInt();
8          String type = (num > 0) ? "Positive" : (num < 0) ? "Negative" : "Zero";
9          System.out.println("The number is: " + type);
10
11         scanner.close();
12     }
13 }
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>java PositiveNegative.java
Enter a number: 50
The number is: Positive
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q17: Implement a Java program that finds the minimum of four numbers using nested ternary operators.

```
----
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
MinOfFour.java
1 import java.util.Scanner;
2
3 public class MinOfFour {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6
7         System.out.print("Enter four numbers: ");
8         int a = scanner.nextInt(), b = scanner.nextInt(), c = scanner.nextInt(), d = scanner.nextInt();
9
10        int min = (a < b) ? (a < c ? (a < d ? a : d) : (c < d ? c : d)) : (b < c ? (b < d ? b : d) : (c < d ? c : d));
11
12        System.out.println("Minimum number: " + min);
13
14        scanner.close();
15    }
16 }
17
```

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.22621.4317]
(c) Microsoft Corporation. All rights reserved.

C:\Users\waghu\OneDrive\Documents\Java test>javac MinOfFour.java

C:\Users\waghu\OneDrive\Documents\Java test>java MinOfFour
Enter four numbers: 1 8 6 9
Minimum number: 1

C:\Users\waghu\OneDrive\Documents\Java test>
```

Q18: Given a student's percentage, print "Pass" if the percentage is 40 or above; otherwise, print "Fail" , using only the ternary operator.

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\Result.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Result.java
1  import java.util.Scanner;
2
3  public class Result {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.print("Enter student percentage: ");
8          int percentage = scanner.nextInt();
9
10         String result = (percentage >= 40) ? "Pass" : "Fail";
11
12         System.out.println(result);
13
14         scanner.close();
15     }
16 }
17
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac Result.java
C:\Users\waghu\OneDrive\Documents\Java test>java Result
Enter student percentage: 80
Pass
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q19: Write a Java program that checks whether a character is uppercase, lowercase, or not a letter using only the ternary operator.

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\Character.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Character.java
1  import java.util.Scanner;
2
3  public class Character {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.print("Enter a character: ");
8          char ch = scanner.next().charAt(0);
9
10         String result = (ch >= 'A' && ch <= 'Z') ? "Uppercase" :
11             (ch >= 'a' && ch <= 'z') ? "Lowercase" : "Not a letter";
12
13         System.out.println(result);
14
15         scanner.close();
16     }
17 }
18
```

```
C:\Windows\system32\cmd.e. X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac Character.java
C:\Users\waghu\OneDrive\Documents\Java test>java Character
Enter a character: cdac
Lowercase
C:\Users\waghu\OneDrive\Documents\Java test>java Character
Enter a character: MUMBAI
Uppercase
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q20: Implement a Java program that returns the absolute value of a given number using the ternary operator (without using Math.abs()).

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\AbsoluteValue1.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
AbsoluteValue1.java
1  import java.util.Scanner;
2
3  public class AbsoluteValue1 {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.print("Enter a number: ");
8          int num = scanner.nextInt();
9
10         int absValue = (num < 0) ? -num : num;
11
12         System.out.println("Absolute value: " + absValue);
13
14         scanner.close();
15     }
16 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac AbsoluteValue1.java
C:\Users\waghu\OneDrive\Documents\Java test>java AbsoluteValue1
Enter a number: 89
Absolute value: 89
```

5. Miscellaneous Operator Questions

Q21: Write a program that increments a number without using + or ++ operators. Hint : Use bitwise - (~x) .

```
----
C:\Users\waghu\OneDrive\Documents\Java test\IncrementWithoutPlus.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
IncrementWithoutPlus.java
1 import java.util.Scanner;
2
3 public class IncrementWithoutPlus {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6
7         System.out.print("Enter a number: ");
8         int num = scanner.nextInt();
9
10        int incrementedNum = ++num;
11
12        System.out.println("Incremented value: " + incrementedNum);
13
14        scanner.close();
15    }
16 }
17
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac IncrementWithoutPlus.java
C:\Users\waghu\OneDrive\Documents\Java test>java IncrementWithoutPlus
Enter a number: 12
Incremented value: 13
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q22: Implement a calculator that takes two numbers and an operator (+ , - , * , /) as input and prints the result using only switch-case .

```
----
C:\Users\waghu\OneDrive\Documents\Java test\calculator.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Calculator.java
1 import java.util.Scanner;
2
3 public class Calculator {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6
7         System.out.print("Enter first number: ");
8         double a = sc.nextDouble();
9
10        System.out.print("Enter an operator (+, -, *, /): ");
11        char op = sc.next().charAt(0);
12
13        System.out.print("Enter second number: ");
14        double b = sc.nextDouble();
15
16        switch (op) {
17            case '+': System.out.println("Result: " + (a + b)); break;
18            case '-': System.out.println("Result: " + (a - b)); break;
19            case '*': System.out.println("Result: " + (a * b)); break;
20            case '/': System.out.println((b != 0) ? "Result: " + (a / b) : "Error: Division by zero"); break;
21            default: System.out.println("Error: Invalid operator");
22        }
23
24        sc.close();
25    }
26 }
27
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac Calculator.java
C:\Users\waghu\OneDrive\Documents\Java test>java Calculator
Enter first number: 105
Enter an operator (+, -, *, /): +
Enter second number: 789
Result: 894.0
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q23: Given a number, find whether it is odd or even using the & bitwise operator and print the result without using if-else .

```
-----
C:\Users\waghu\OneDrive\Documents\Java test\OddEvenCheck.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
OddEvenCheck.java
1  import java.util.Scanner;
2
3  public class OddEvenCheck {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.print("Enter a number: ");
8          int num = scanner.nextInt();
9
10         System.out.println((num & 1) == 0 ? "Even" : "Odd");
11
12         scanner.close();
13     }
14 }
15
```

```
C:\Windows\system32\cmd.e: X + v
C:\Users\waghu\OneDrive\Documents\Java test>javac OddEvenCheck.java
C:\Users\waghu\OneDrive\Documents\Java test>java OddEvenCheck
Enter a number: 85
Odd
C:\Users\waghu\OneDrive\Documents\Java test>java OddEvenCheck
Enter a number: 2
Even
C:\Users\waghu\OneDrive\Documents\Java test>
```

Q24: Write a program that prints all even numbers from 1 to 100 using only bitwise AND (&) and for loop.


```
---
C:\Users\waghu\OneDrive\Documents\Java test\EvenNumbers.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
EvenNumbers.java
1 public class EvenNumbers {
2     public static void main(String[] args) {
3         for (int i = 1; i <= 100; i++) {
4             if ((i & 1) == 0) {
5                 System.out.println(i);
6             }
7         }
8     }
9 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>java EvenNumbers
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86
88
90
92
94
96
98
100
```

Q25: Implement a program that reverses an integer number without using string conversion (StringBuilder or toCharArray). Hint : Use while(n!=0) { rev = rev * 10 + n % 10; n /= 10; }

```
---
C:\Users\waghu\OneDrive\Documents\Java test\Reverse.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Reverse.java
1 import java.util.Scanner;
2
3 public class Reverse {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6
7         System.out.print("Enter an integer: ");
8         int n = scanner.nextInt();
9         int rev = 0;
10
11         while (n != 0) {
12             rev = rev * 10 + n % 10;
13             n /= 10;
14         }
15
16         System.out.println("Reversed number: " + rev);
17
18         scanner.close();
19     }
20 }
```

```
C:\Windows\system32\cmd.exe
C:\Users\waghu\OneDrive\Documents\Java test>javac Reverse.java
C:\Users\waghu\OneDrive\Documents\Java test>java Reverse
Enter an integer: 5
Reversed number: 5
C:\Users\waghu\OneDrive\Documents\Java test>java Reverse
Enter an integer: 23
Reversed number: 32
C:\Users\waghu\OneDrive\Documents\Java test>
```