1. **Java program that reverses the digits of a given integer using a while loop:**

public class Main {

public static void main(String[] args) {

int num = 12345;

int reversed = 0;

while (num != 0) {

int digit = num % 10;

reversed = reversed \* 10 + digit;

num /= 10;

}

System.out.println("Reversed number: " + reversed);

}

}

1. Method that checks if a String is a palindrome:

public class Main {

public static void main(String[] args) {

String str = "madam";

System.out.println(isPalindrome(str));

}

public static boolean isPalindrome(String str) {

int start = 0;

int end = str.length() - 1;

while (start < end) {

if (str.charAt(start) != str.charAt(end)) {

return false;

}

start++;

end--;

}

return true;

}

}

1. Java program that counts vowels and consonants in a String:

public class Main {

public static void main(String[] args) {

String input = "Hello World";

int vowels = 0, consonants = 0;

for (int i = 0; i < input.length(); i++) {

char ch = input.charAt(i);

if (Character.isLetter(ch)) {

if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||

ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {

vowels++;

} else {

consonants++;

}

}

}

System.out.println("Vowels: " + vowels + ", Consonants: " + consonants);

}

}

1. Method that capitalizes the first letter of each word in a String:

public class Main {

public static void main(String[] args) {

String input = "hello world from java";

System.out.println(capitalizeWords(input));

}

public static String capitalizeWords(String str) {

String[] words = str.split(" ");

StringBuilder result = new StringBuilder();

for (String word : words) {

result.append(Character.toUpperCase(word.charAt(0)))

.append(word.substring(1)).append(" ");

}

return result.toString().trim();

}

}

1. Program that checks if a given number is even or odd:

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int num = scanner.nextInt();

if (num % 2 == 0) {

System.out.println(num + " is even");

} else {

System.out.println(num + " is odd");

}

}

}