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Assignment No 1

Java Code Review and Error Correction

Objective: Identify, correct, and explain errors in Java code snippets to strengthen understanding of Java syntax and structure.

Q1.

Error:

Missing semicolon at the end of the println statement

Corrected Code:

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Hello, World!");  
    }  
}
```

Explanation:

In Java, every statement must end with a semicolon.

The missing semicolon after `println("Hello, World!")` causes a compilation error.

Output:

```
● PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes\" ;  
Hello, World!  
○ PS F:\Valuts_Of_Codes> █
```

Q2.

Error:

Method call `greet();` is outside any method

Corrected Code:

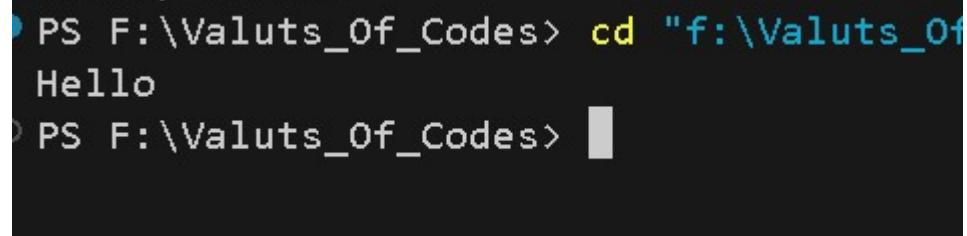
```
public class Main {  
    public void greet() {  
        System.out.println("Hello");  
    }  
  
    public static void main(String[] args) {  
        Main obj = new Main();  
        obj.greet();  
    }  
}
```

Explanation:

In Java,
executable code must be inside methods. The greet(); call was floating outside any method.

We need to create a main method and call greet() from there using an object.

Output:



A terminal window showing the execution of a Java program. The command 'cd "f:\Valuts_Of_Codes"' is run, followed by the execution of the 'Main' class. The output 'Hello' is displayed, indicating the program ran successfully.

```
PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes"  
Hello  
PS F:\Valuts_Of_Codes>
```

Q3.

Error:

Type mismatch: trying to assign String to int variable

Corrected Code:

```
public class Main {  
    public static void main(String[] args) {  
        int number = 10;  
        System.out.println("The number is: " + number);  
    }  
}
```

Explanation:

Java is strongly typed, so you cannot assign a String value ("10") to an int variable.
The quotes make it a String. Remove quotes to make it an integer.

Output:

```
OUTPUT PROBLEMS DEBUG CONSOLE TERMINAL
● PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes"
The number is: 10
○ PS F:\Valuts_Of_Codes> █
```

Q4.

Error:

Array index out of bounds

Corrected Code:

```
public class Main {
    public static void main(String[] args) {
        int[] numbers = {1, 2, 3, 4};
        System.out.println("The fourth element is: " + numbers[3]);
    }
}
```

Explanation:

Array indices start from 0, so an array with 4 elements has indices 0-3. Trying to access index 4 causes ArrayIndexOutOfBoundsException.

Output:

```
OUTPUT PROBLEMS DEBUG CONSOLE TERMINAL
● PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes"
The fourth element is: 4
○ PS F:\Valuts_Of_Codes> █
```

Q5.

Error:

Cannot call non-static method from static context

Corrected Code:

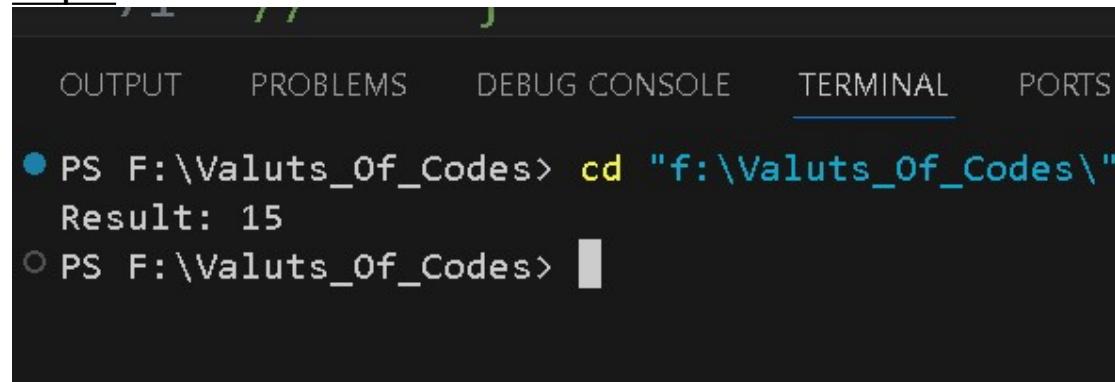
```
public class Main {  
    public static void main(String[] args) {  
        int result = addNumbers(5, 10);  
        System.out.println("Result: " + result);  
    }  
  
    public static int addNumbers(int a, int b) {  
        return a + b;  
    }  
}
```

Explanation:

The main method is static, but addNumbers is non-static.

You cannot call non-static methods from static context without creating an object.
Solution is make addNumbers static.

Output:



```
● PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes\"  
Result: 15  
○ PS F:\Valuts_Of_Codes>
```

Q6.

Error:

Variable 'age' used without initialization

Corrected Code:

```
public class Main {  
    public static void main(String[] args) {  
        int age = 20;  
        if (age >= 18) {  
            System.out.println("You are eligible to vote.");  
        }  
    }  
}
```

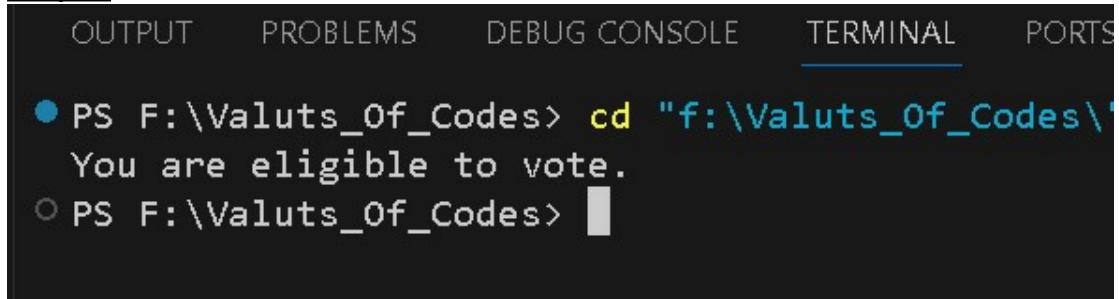
```
}
```

Explanation:

Local variables in Java must be initialized before use.

The variable 'age' was declared but not assigned any value before being used in the if condition.

Output:



```
OUTPUT PROBLEMS DEBUG CONSOLE TERMINAL PORTS
● PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes\"  
You are eligible to vote.  
○ PS F:\Valuts_Of_Codes> █
```

Q7.

Error:

Variable 'i' accessed outside its scope

Corrected Code:

```
public class Main {  
    public static void main(String[] args) {  
        int i;  
        for (i = 0; i < 5; i++) {  
            System.out.println("Number: " + i);  
        }  
        i++;  
        System.out.println("Outside loop: " + i);  
    }  
}
```

Explanation:

The variable 'i' was declared inside the for loop, so its scope is limited to the loop. To use it outside, declare it before the loop.

Output:

The screenshot shows a terminal window with the following text:

```
PS F:\Valuts_Of_Codes> cd "f:\Valuts_Of_Codes"
Number: 0
Number: 1
Number: 2
Number: 3
Number: 4
Outside loop: 6
PS F:\Valuts_Of_Codes>
```

Q8.

Error:

Missing parentheses in while condition, variable 'count' not declared

Corrected Code:

```
public class Main {
    public static void main(String[] args) {
        int count = 0;
        while (count < 10) {
            System.out.println("Count: " + count);
            count++;
        }
    }
}
```

Explanation:

While loop requires parentheses around the condition.
Also, the variable 'count' was not declared and initialized.

Output:

```
    public class Main {
        static void main(String[] args) {
            System.out.println("Count: 0");
            System.out.println("Count: 1");
            System.out.println("Count: 2");
            System.out.println("Count: 3");
            System.out.println("Count: 4");
            System.out.println("Count: 5");
            System.out.println("Count: 6");
            System.out.println("Count: 7");
            System.out.println("Count: 8");
            System.out.println("Count: 9");
        }
    }
}

● PS F:\Valuts_Of_Codes> cd "f:\Valuts_O
Count: 0
Count: 1
Count: 2
Count: 3
Count: 4
Count: 5
Count: 6
Count: 7
Count: 8
Count: 9
○ PS F:\Valuts_Of_Codes>
```