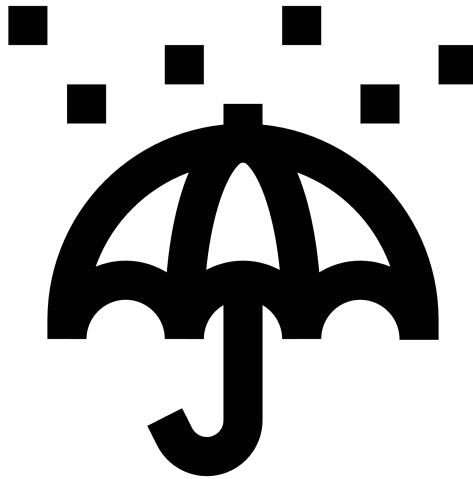


Variable Scope

global vs local



A computer program simulating a disaster warning system generates and evaluates a random number representing a rainfall level.

TASK 1

Copy/paste the starter code into a new project in your IDE.

Run the code.

Answer the following questions.

There is a main() function. How many helper functions does the program have?	
Which functions declare variables?	
What is the range that the random number generator generates?	
What error message is displayed when you run the program?	

Local Variables

In the `generateRainfall()` function, a variable is declared:

```
int rainfall; //declare a variable
```

Its **identifier** is `rainfall`.

Its **datatype** is `int`.

Because it has been declared inside a function, it is **local** to that function. This means that it is visible only to that function - other functions have no idea that it exists! The variable has **local scope**.

This is the cause of the error. Another function, `evaluateRainfall()`, wants to use that variable, too!

But it can't - because it is a local variable inside `generateRainfall()`.

Global Variables

If more than one function needs to use the same variable(s), one strategy is to give them **global scope**. This means that the variable does not belong to any function - it is available to all functions!

To do this in Java, we can **declare** the variable(s) at the top of the program, before the `main()` function:

```
//global variables
static int rainfall;

public static void main(String[] args){

    generateRainfall();

}
```

There's that funny word **static** again! We will discover what this means later in the course (or research it yourself now!).

Now that we have declared rainfall to be **global**, we don't need to declare it in the generateRainfall() function. We can just start to use it.

```
public static void generateRainfall(){

    rainfall = (int)(Math.random()*191)+10;

    //now call the evaluateRainfall function
    evaluateRainfall();

}
```

Task 2

Can you get the program to work by making rainfall a **global** variable? Hopefully **all of the functions** in the program can now use this variable.

Task 3

Attempt the Extension Activity in the unit page. Be ready to use your current understanding of **variable scope**.