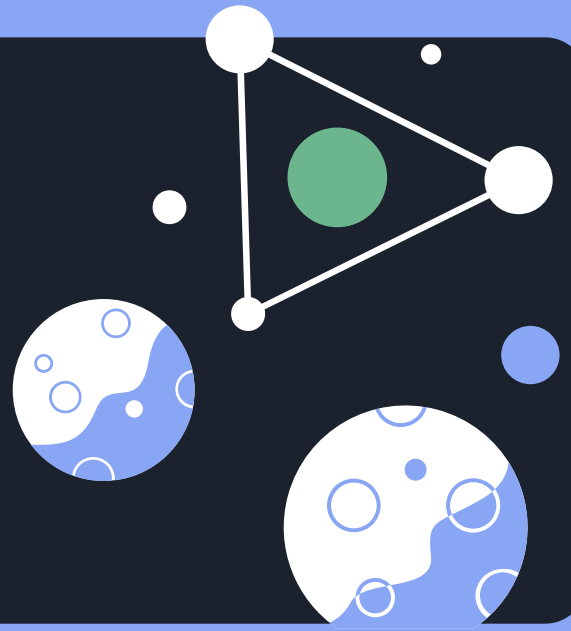
Intro to Java Workshop



By: Rahul Nair 2026

TIW 2023

About Me

Name: Rahul Nair
Major: Computer Science

Optional Overview

01 **What is Java**

History, Features and Applications of Java

02 **replit**

Setting up a development environment (replit)

03 **Java syntax**

Variables, data types, control flow statements, and basic input/output

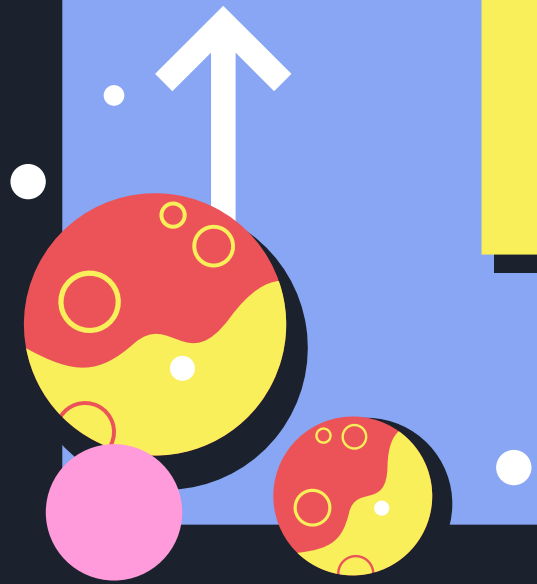
04 **Java Project**

Simple Java multiplication table project

01

What is Java

History, Features and Applications of java



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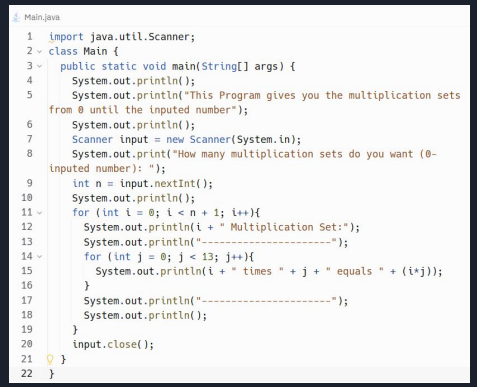
What is Java?



```java
import java.util.Scanner;
class Main {
  public static void main(String[] args) {
    System.out.println();
    System.out.println("This Program gives you the multiplication sets from 0 until the inputed number");
    System.out.println();
    Scanner input = new Scanner(System.in);
    System.out.print("How many multiplication sets do you want (0-inputed number): ");
    int n = input.nextInt();
    System.out.println();
    for (int i = 0; i < n + 1; i++){
      System.out.println(i + " Multiplication Set:");
      System.out.println("----------------------");
      for (int j = 0; j < 13; j++){
        System.out.println(i + " times " + j + " equals " + (i*j));
      }
      System.out.println("----------------------");
      System.out.println();
    }
    input.close();
  }
}
```

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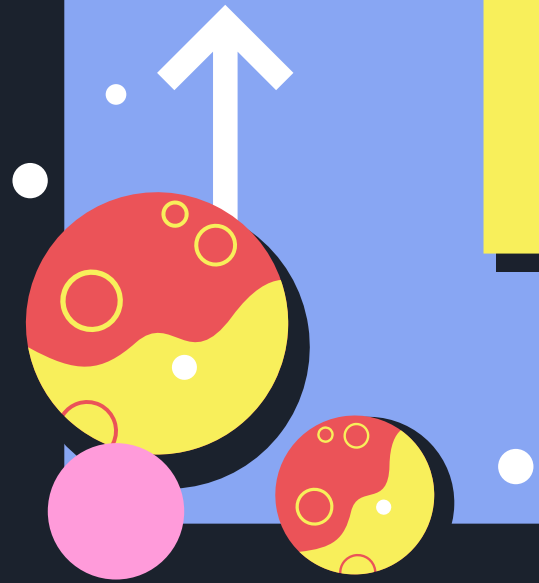


02

Setting up replit

Setting up a development environment for java (replit)

What is a development environment?

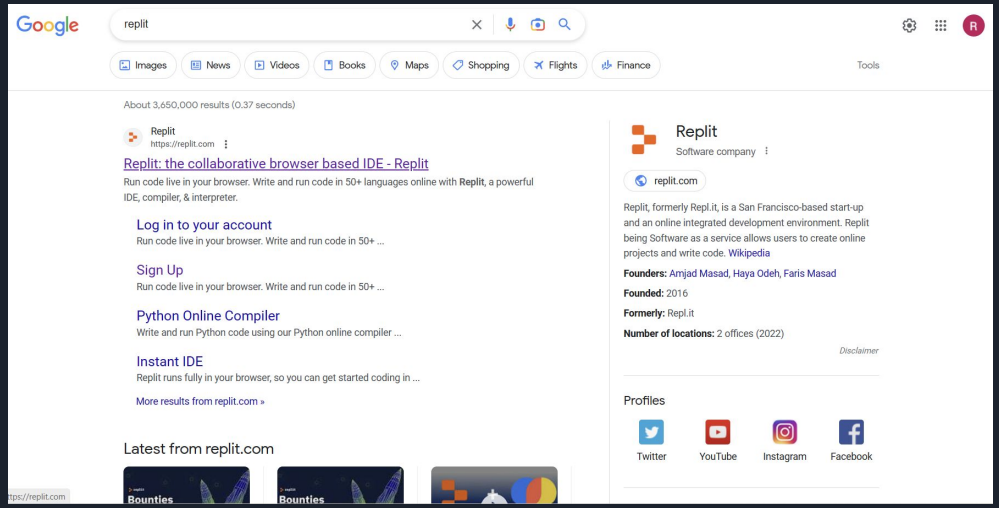
A development environment in software and web development is a workspace for developers to make changes without breaking anything in a live environment.

What is replit?

Replit is an online integrated development environment (IDE) that allows users to write, run, and collaborate on code in various programming languages directly from their web browser.

Setting up Replit

Search up replit in your web browser



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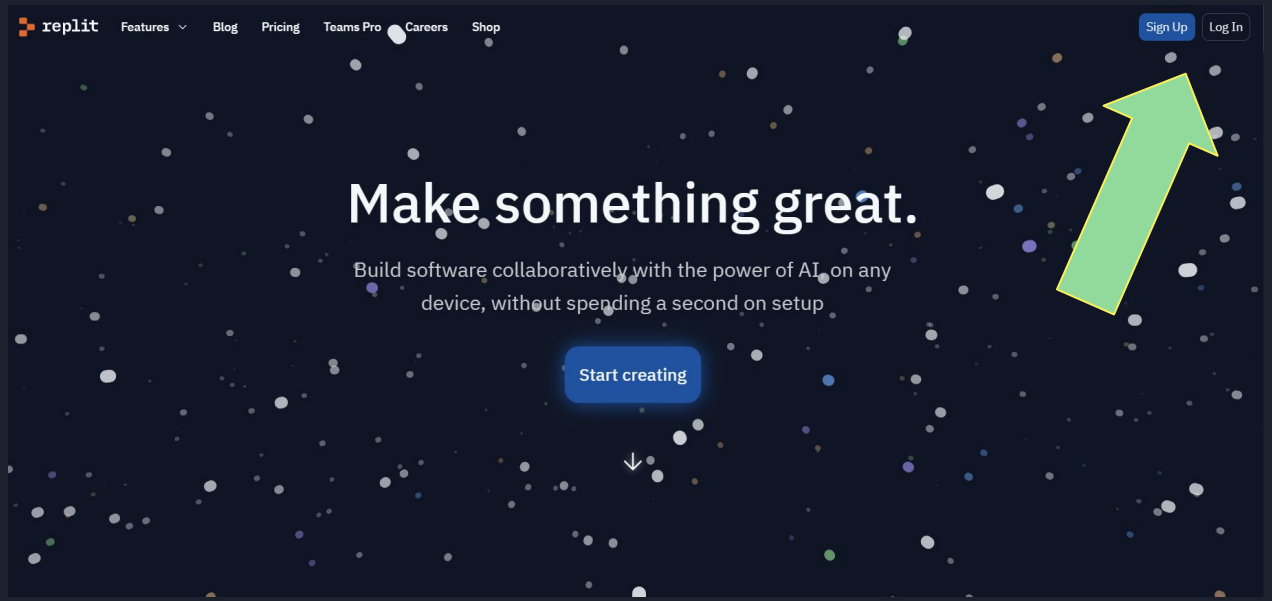
replit
Features
Blog
Pricing
Teams Pro
Careers
Shop
Sign Up
Log In
Make something great.
Build software collaboratively with the power of AI, on any device, without spending a second on setup
Start creating

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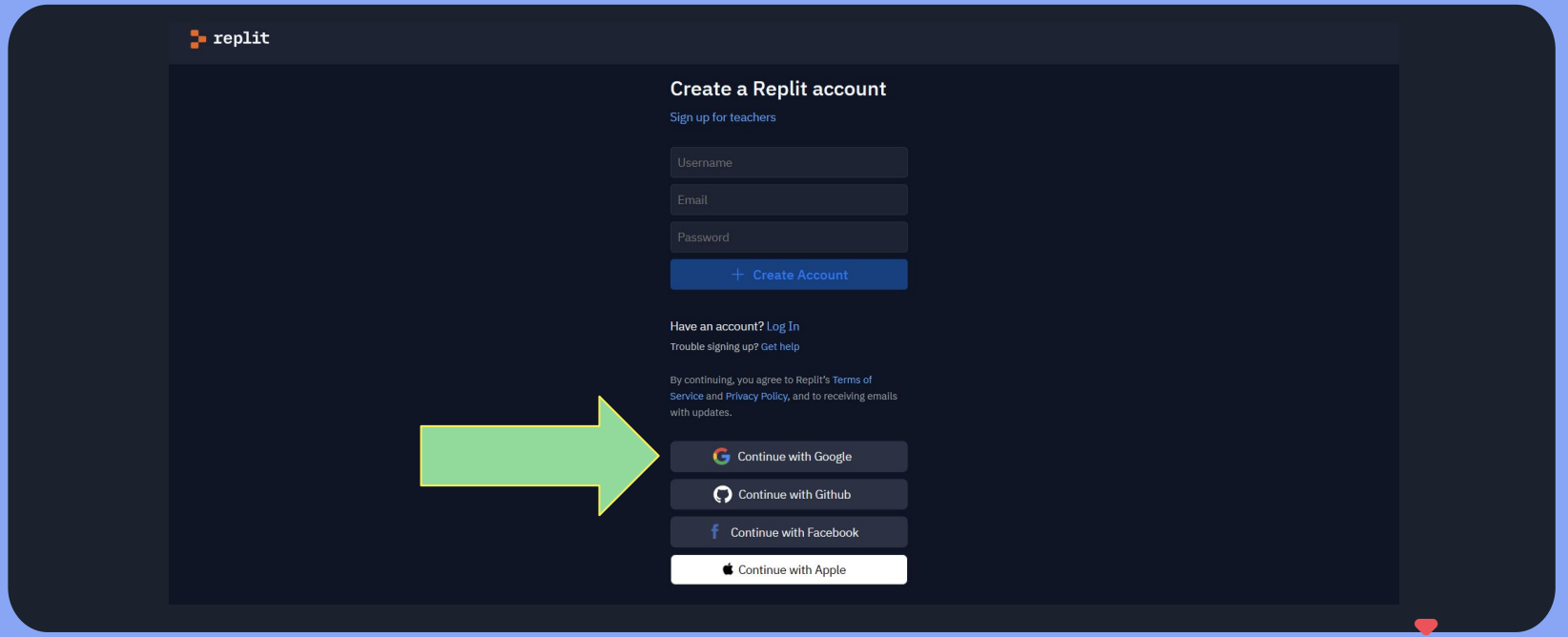
replit
Create a Replit account
Sign up for teachers
Username
Email
Password
Create Account
Have an account? Log In
Trouble signing up? Get help
By continuing, you agree to Replit's Terms of Service and Privacy Policy, and to receiving emails with updates.
Continue with Google
Continue with Github
Continue with Facebook
Continue with Apple

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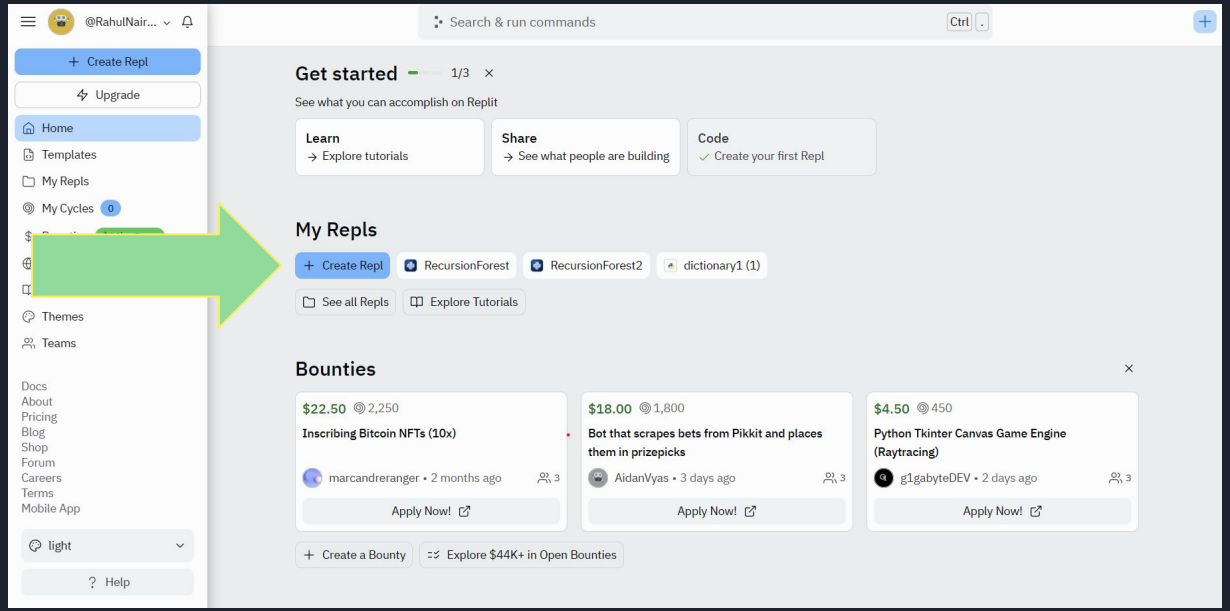
@RahulNair...
Create Repl
Upgrade
Home
Templates
My Repls
My Cycles 0
Themes
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Careers
Terms
Mobile App
light
Help
Search & run commands
Ctrl .
Get started 1/3
See what you can accomplish on Replit
Learn
→ Explore tutorials
Share
→ See what people are building
Code
✓ Create your first Repl
My Repls
Create Repl
RecursionForest
RecursionForest2
dictionary1 (1)
See all Repls
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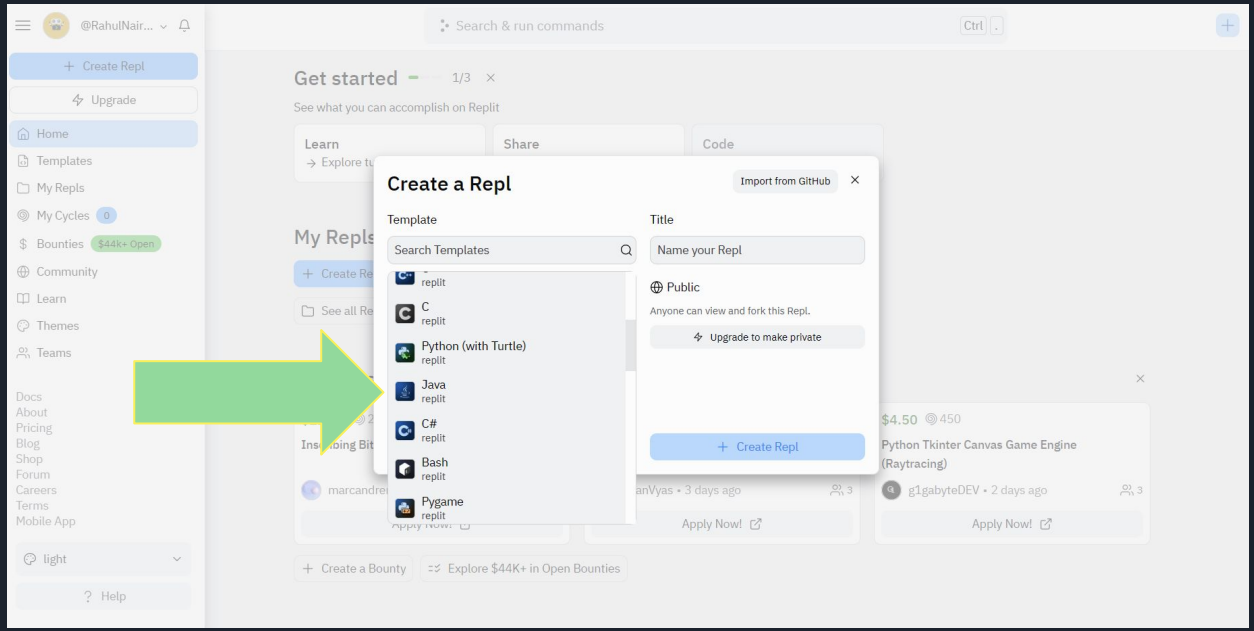
Search & run commands
Create Repl
Upgrade
Home
Templates
My Repls
My Cycles
Bounties
Community
Learn
Themes
Teams
Get started
1/3
See what you can accomplish on Replit
Learn
Share
Code
Create a Repl
Import from GitHub
Template
Search Templates
Title
Name your Repl
Public
Anyone can view and fork this Repl.
Upgrade to make private
C
Python (with Turtle)
Java
C#
Bash
Pygame
Create Repl
Python Tkinter Canvas Game Engine (Raytracing)
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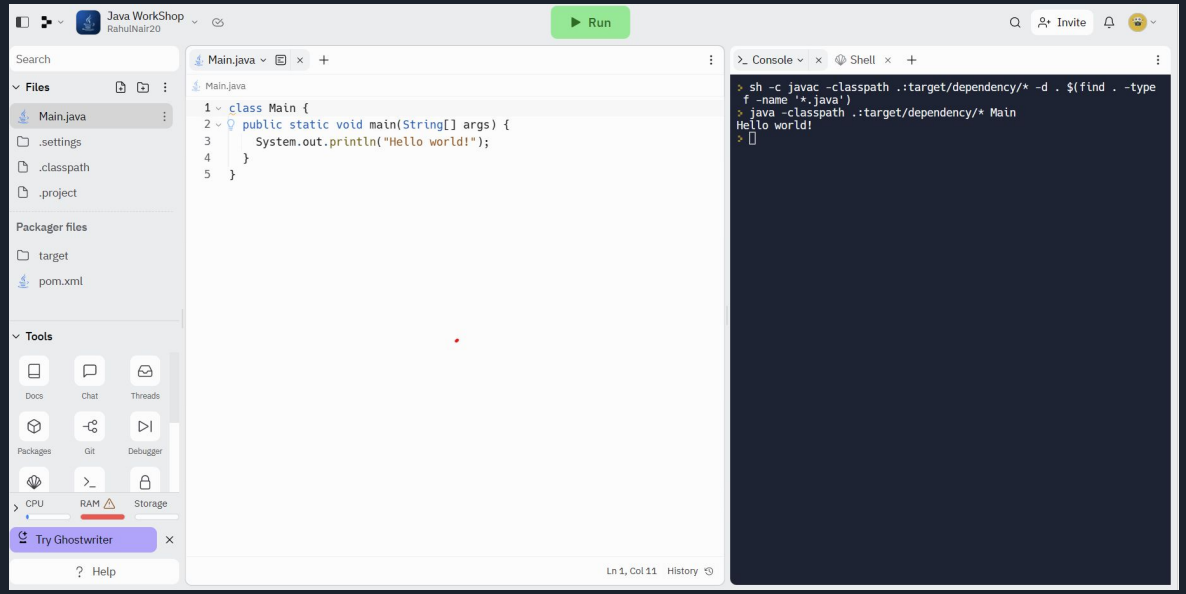
Java WorkShop
RahulNair20
Run
Invite
Search
Files
Main.java
.settings
.classpath
.project
Packager files
target
pom.xml
Tools
Docs
Chat
Threads
Packages
Git
Debugger
CPU
RAM
Storage
Try Ghostwriter
Help
Main.java
Main.java
1 class Main {
2 public static void main(String[] args) {
3 System.out.println("Hello world!");
4 }
5 }
Ln 1, Col 11
History
Console
Shell
> sh -c javac -classpath .:target/dependency/* -d . $(find . -type f -name '*.java')
> java -classpath .:target/dependency/* Main
Hello world!
>

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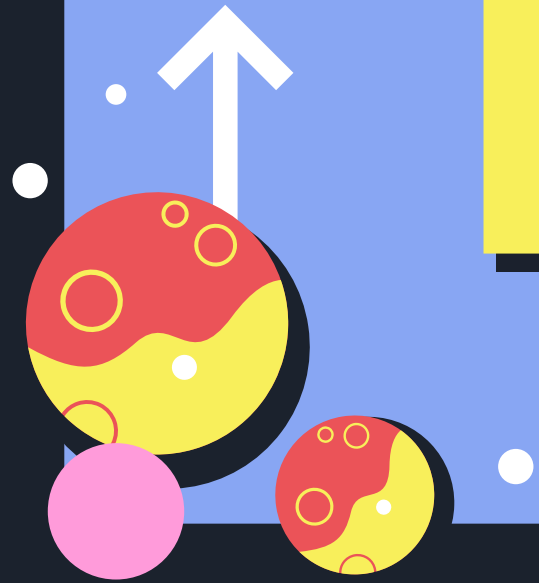


03

Java Syntax

Variables, data types, operators, control flow statements (if and loops), and basic input/output (Scanner class).

Before you write anything:

Main.java

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

- `class` means a collection of related methods (and data)
- `public` means accessible from any code in the program
- `Main` is the name of the class
- `static` means not associated with an instance of an object
- `void` means the method does not return anything
- `main` is the name of the method
- `String[]` means the type of the parameter is an array of strings
- `arg` is the name of the parameter – can be used to provide inputs to the program when it starts
- `System.out.println` sends output to the “console”

Before you write anything:

Main.java

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

- *Are the curly braces required?* – yes, every class and method must start and end with curly braces
- *Are the line breaks required?* – not by the compiler, but improves readability
- *Is the indentation required?* – not by the compiler, but improves readability

Data Types in java

Primitive	Reference
- Integer - Double - Character - boolean	- String - Scanner

Integer (int)

- 1,2,3...
- 0
- -1,-2,-3...

Floating Point(double)

- 7.2
- 0.0
- -12.7

Characters(char)

- ‘a’ ‘b’ ‘c’
- ‘A’ ‘B’ ‘C’
- ‘!’ ‘)’ ‘ ‘

Boolean (boolean)

- true
- false

Ways to use boolean values

- >, <, >=, <=
- ==, !=
- && (and)
- || (or)

- 8 > 6 -> true
- 7 <= 2 - > false
- 12 == 7 -> false
- 12 != 7 -> true
- (8 > 6) && (7 < 2) -> false
- (8 > 6) || (7 < 2) -> true

String (String)

- “Hello”
- “86”
- “ “

What operations can you perform on int and double values?

- Mathematical – addition (+), subtraction (-), multiplication (*), division (\), mod (%)
- Relational – equals (==), not equals (!=), greater than (>), less than (<), greater than or equal to (>=), less than or equal to (<=)

What operations can you perform on String values?

- Concatenation (+)

“Happy” + “Birthday” -> “HappyBirthday”

Print Statements

- System.out.println(<thing you want to print>);
- System.out.print(<thing you want to print>);

Variables

- **Must** be declared with a type and name – e.g., `int num;`
- Names ideally should be in camel-case starting with a lowercase letter – e.g., `double costPerShare;`
- Only assign a value of the corresponding type
  - Can assign `int` to `double`
  - Can assign `char` to `int` and vice versa – again, avoid writing confusing code and you can avoid such corner cases!

Conditional statements

```
if (<condition>) {
    <statement>
    ...
}
else {
    <statement>
    ...
}
```

- Condition **must** be in parenthesis ( ) and evaluate to a boolean value
- Statements to execute when condition is true/false **should** be in curly braces { } – not required when there is only one statement, but always including curly braces is a good practice
- `else` clause is optional

Loops

```
for (int i = 0; i < 3; i++) {
    System.out.println(i);
}
```

```
while (i < 5) {
    System.out.println("Iteration " + ++i);
}
```

For Loop

```
for (<initializer>; <continuation condition>; <update>) {
   <statement>
   ...
}
```

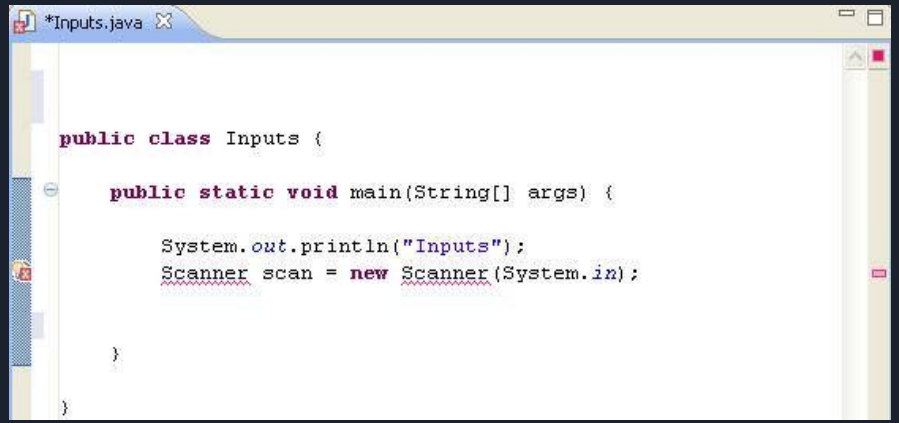
- initializer: declares and initializes a loop variable (i = 0)
- continuation condition: determines whether the loop is finished (i < 5)
- update: modifies the loop variable – should be “closer” to making continuation condition false (i++)

While Loop

```
While (<condition>) {
   <statement>
   ...
}
```

- If the condition is true, loop will continue
- If the condition is false, loop will stop
- Needs something to be updated in while loop to make condition go from true to false or else there will be an infinite loop

Scanner objects



Used for reading input from the keyboard (i.e., console) or a file
Provides methods to obtain an `int`, `double`, or word

Creating a scanner object

- Need to import java.util.Scanner;
- Scanner <name> = new Scanner(System.in);

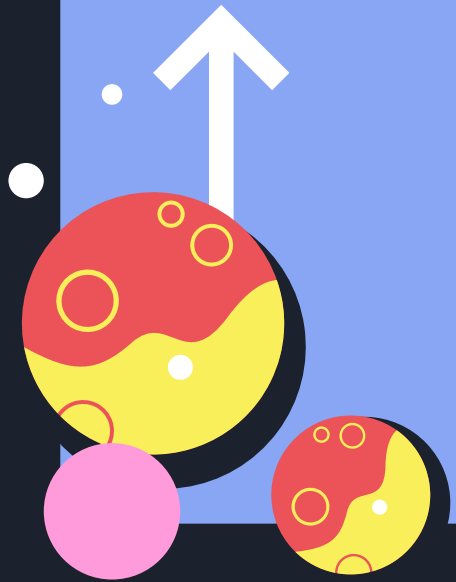
Using a scanner object

- Int x = <name>.nextInt();
- Int x = <name>.nextDouble();
- Int x = <name>.nextLine();
- <name>.close()

04

Java Project

Creating an interactive multiplication table using basic java syntax



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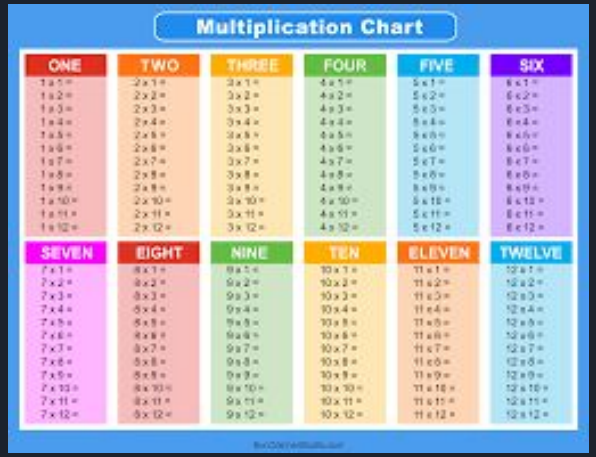
Goals of the Project

- Have an input where the user can choose how many numbers they want to see the for the table
- Make it visually easy for the user to consume
- Write efficient code without repetition of statements



Java things to use for the Project

- Use a scanner to get a user input
- Use print statements to show table
- Use for loop to not have to repeat print the table multiple times

Thanks!

Does anyone have any questions?

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