

Requirement 3. General Knowledge.

Do the following:

3 (a) Create a list of five popular programming languages in use today and describe which industry or industries they are primarily used in and why.

1. Python

- **Industries:** Data Science, AI/ML, Web Development, Finance, Education
- **Why:** Python's simple syntax and extensive libraries (e.g., NumPy, TensorFlow, Django) make it ideal for rapid development, prototyping, and data analysis. It's a go-to for machine learning and scientific computing.
- Example Code: `print("Hello, World!")`

2. JavaScript

- **Industries:** Web Development, E-Commerce, Mobile Apps, SaaS
- **Why:** JavaScript is the standard for front-end development of webpages, enabling dynamic websites and web apps. With Node.js, it's also used on the server-side, offering full-stack development capabilities.
- Example Code: `console.log("Hello, World!");`

3. Java

- **Industries:** Enterprise Software, Android Development, Banking, E-Commerce
- **Why:** Known for stability, portability, and scalability. Java is widely used in large systems and Android apps due to its robust ecosystem and JVM (Java Virtual Machine).
- Example Code:

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

4. C#

- **Industries:** Game Development, Enterprise Applications, FinTech
- **Why:** Developed by Microsoft, C# integrates seamlessly with .NET, making it a favorite for Windows applications and Unity-based game development.
- Example Code:

```
using System;  
  
class Program {  
    static void Main() {  
        Console.WriteLine("Hello, World!");  
    }  
}
```

```
}  
  
}
```

5. C++

- **Industries:** Game Development, Embedded Systems, Automotive, Finance (High-Frequency Trading)
- **Why:** Offers fine control over system resources and high performance, which is crucial in real-time applications like gaming engines and systems programming.
- Example Code:

```
#include <iostream>  
  
int main() {  
  
    std::cout << "Hello, World!" << std::endl;  
  
    return 0;  
  
}
```

6. Rust

- **Industries:** Systems Programming, Cybersecurity, Embedded Systems, Blockchain
- **Why:** Known for memory safety without a garbage collector, Rust is used where performance and security are critical. Gaining popularity in WebAssembly and secure software development.
- Example Code: puts "Hello, World!"

7. Swift

- **Industries:** Mobile App Development (iOS), Wearable Tech, HealthTech
- **Why:** Swift is Apple's language for iOS and macOS development. It's fast, modern, and safer than Objective-C, making it the preferred choice for Apple ecosystem apps.
- Example Code: print("Hello, World!")

8. TypeScript

- **Industries:** Web Development, SaaS, Enterprise Applications
- **Why:** A superset of JavaScript, TypeScript adds static typing, helping large-scale applications become more maintainable and bug-resistant. It's widely used with Angular and React.
- Example Code:

```
const message: string = "Hello, World!";  
  
console.log(message);
```

3 (b) Describe three different programmed devices you rely on every day.

- **Smartphones and Tablets:** These ubiquitous devices are powered by operating systems (like iOS and Android) and numerous applications (apps) that are all built with code.

- Computers (Laptops and Desktops): Operating systems (Windows, macOS, Linux) and applications (word processors, browsers, games) are all programmed, enabling them to perform various tasks.
- Smart TVs: These TVs have built-in operating systems and apps that allow for streaming, browsing, and more.
- Wearable Devices (Smartwatches, Fitness Trackers): These devices collect and process data using programmed features for health monitoring, notifications, and other functions.
- Gaming Consoles: The games themselves and the console's operating system are programmed to provide entertainment and interactive experiences.
- Home Appliances (Smart Refrigerators, Washing Machines): Many modern appliances have embedded programs that allow for smart features, control via apps, and optimized performance.
- Automobiles: Modern cars are increasingly reliant on software for engine management, safety features (like ABS and airbags), navigation, and infotainment systems.
- ATMs and Point-of-Sale (POS) Terminals: These financial devices rely on robust software for secure transactions and managing financial data.
- Smart Home Devices: Devices like smart lighting, thermostats, and security cameras are programmed to automate and control various aspects of a home.
- Medical Devices: Various medical devices, from diagnostic equipment to implantable devices, utilize software for their operation, analysis, and treatment delivery.

10 Everyday IoT Devices Powered by Code

<https://blog.hyperiondev.com/post/10-everyday-iot-enabled-objects-programmed-with-code/>

<https://www.fastcompany.com/3016427/10-everyday-objects-that-can-be-programmed-to-run-code>