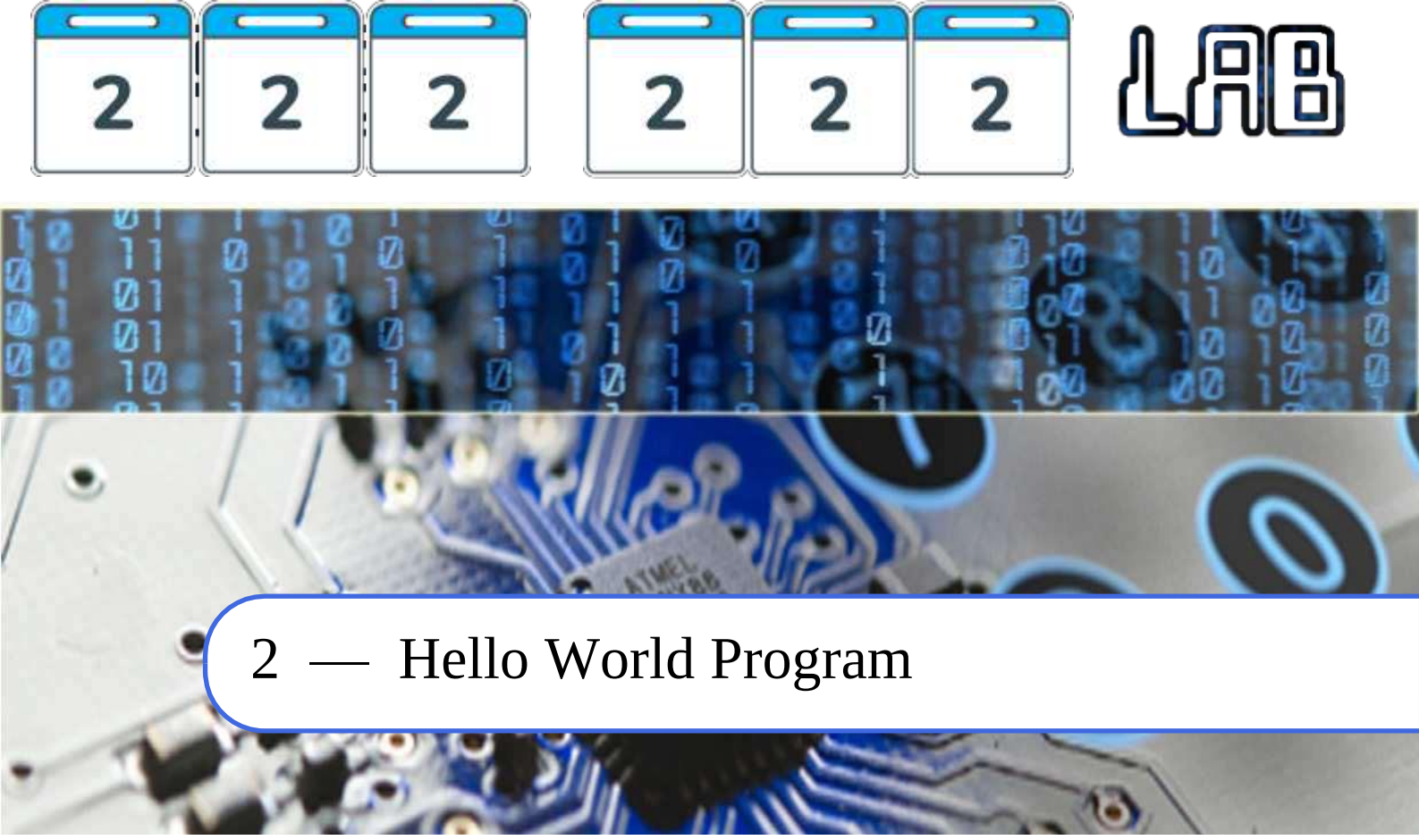

2 — Hello World Program

LAB Objectives

The aim of this LAB experiment is to introduce students to Arduino programming through the classical *Hello World Program*.

2.1 Hardware Required

– Arduino Uno Board

2.2 Circuit

Only your Arduino Uno Board (Figure 2.1) is needed for this experiment. To accomplish this experiment using the Virtual Breadboard software follow the steps below :

1. On the *Toolbox* menu, locate the *Arduino* subenu item and expand it.
2. On the expanded Arduino submenu, locate the *Arduino Uno* board component and place it on the current *DesignSheet*.
3. On the *Solution Explorer*, select the project root and right-click the mouse to display the its tasks menu.
4. From the displayed tasks menu, select the *Add Java Source Project* item. This will open a menu to add a new JAVA source code project sheet.
5. In the opened menu, enter a name for your Java source project (say "HelloWorld.SRC").
6. On the *Solution Explorer*, select the created Java source code project sheet and right-click the mouse to display its task menu.

7. From the displayed tasks menu, select the *Add New Java Source File* item. This will open a menu to add a new JAVA source file.
8. In the opened menu, enter a name for your Java source file (say "HelloWorld.java").
9. From the *Layout Toolbar*, click the *Two Panel* to split the design panel into two separate design panels.
10. Select Java source file panel.
11. On the *Code Generators Menu*, locate and click the *Add an Arduino code framework* item to generate the minimum code needed for an Arduino sketch to compile (Pro- gram 2.1).
12. Modify the *setup()* function in initial code to start the serial communication port and display the message "Hello World !" on the Arduino environment's built-in serial monitor as shown in Program 2.2.

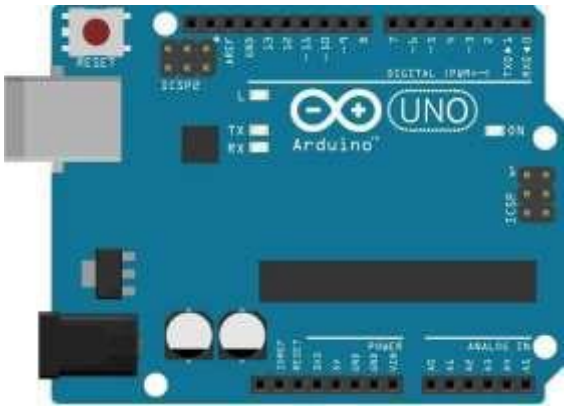

Figure 2.1 – Arduino Uno Board.

Program 2.1 A minimum code needed for an Arduino sketch to compile.

```
import muvium.compatibility.arduino.*;

public class HelloWorld extends Arduino{

    // The setup() method runs once, when the sketch starts public void
    setup() {
        // Your setup code goes here
    }

    // the loop() method runs over and over again,
    // as long as the Arduino has power public
    void loop(){
        // Your loop code goes here
    }
}
```

Program 2.2 Hello World program.

```
import muvium.compatibility.arduino.*;

public class HelloWorld extends Arduino{

    // The setup() method runs once, when the sketch starts public void
    setup() {
        Serial.begin(9600);
        Serial.println("Hello World!");
    }

    // the loop() method runs over and over again,
    // as long as the Arduino has power public
    void loop(){
        // Your loop code goes here
    }
}
```

2.3 Circuit Emulation

To test your program you need to build source code and then run the emulator. On the *Debug Toolbar*, locate and click the *Build* button to build your code. If there are no errors in the compilation process, emulate the your program by clicking the run button located on the *Application Toolbar*.

Exercise 2.1 Modify Program 2.2 to display the message "CCAI- 436 Lab" on the Arduino environment's built-in serial monitor.