SIT111: Task 3.1P - Arduino Blinky Project

Learning Objective

To build and understand a basic Arduino circuit that makes an LED blink – a foundational exercise in electronics and programming.

Summary - TL; DR

1. Read through the materials on the unit site.
2. Build and test the Arduino circuit, run experiments.
3. Submit:
    - Summary and reflection
    - Outcome from activities:
        - Photos, codes, videos of the constructed circuit or experiments
        - Describe any additional insights or knowledge learned during the active learning activities

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Your Task

Using an Arduino microcontroller, create a circuit that causes an LED to blink. This task will involve both hardware assembly and software programming.

Materials Required

- Arduino Uno (or similar Arduino board)
- LED
- 220-ohm resistor
- Breadboard
- Jumper wires
- USB cable to connect the Arduino to a computer
- Arduino IDE installed on the computer

Circuit Assembly

- Connect the LED to one of the digital pins (e.g., pin 13) on the Arduino using a breadboard.
- Insert a resistor in series with the LED to limit current and prevent damage.
- Use jumper wires to connect the components and to provide ground and power from the Arduino.

Programming

Open the Arduino IDE on the computer. Write a simple program (sketch) that turns the LED on and off in intervals – this will create the blinking effect.

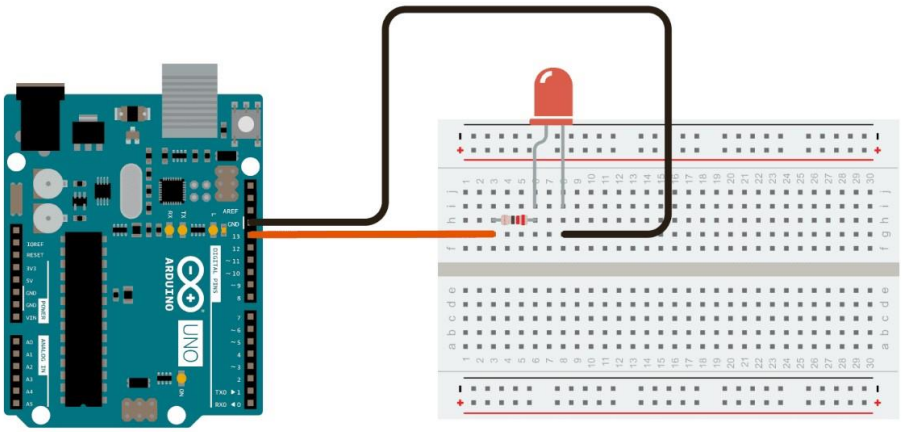

Figure 1: Sample Circuit

```
// Pin number for the LED const int
ledPin = 13;

void setup() {
  // initialize digital pin 13 as an output.
  pinMode(ledPin, OUTPUT);
}

void loop() { // turn the
  LED on
  digitalWrite(ledPin, HIGH); delay(1000); // wait
  for a second

  // turn the LED off
  digitalWrite(ledPin, LOW); delay(1000); // wait
  for a second
}
```

Uploading and Testing:

- Connect the Arduino to the computer using the USB cable.
- Upload the program to the Arduino board using the IDE.

- Observe the LED blinking and adjust the delay in the code to change the blink rate.

Prepare Your Submission

Once you feel confident that you have achieved the learning goals, you can prepare a submission to demonstrate this. This will contain three sections: summary of what you learnt, reflection on your learning, and evidence of study and practice.

Section 1: Summary

Summarise what you have done and what you have learnt from the experiment. This should be a personal summary, written so that it will be useful to you should you need to quickly revise these concepts and tools in the future. Capture the most important aspects from the materials in the unit site and anything else you find related to this topic.

Section 2: Reflection

Reflect on your learning by responding to the following prompts:

- How do you know you have achieved the learning goals?
- What is the most important thing you learned from this and why?
- How does the content or skills learned here relate to things you already know?
- Where or when do you think it will be useful?

Note:: The content for the first two sections should not exceed 500 words or 1 printed page.

Section 3: Evidence of study and practice

This section will contain evidence of your outputs from the learning activities for this task:

- Screenshot of the Arduino IDE successsfully uploading the code
- Your code
- A short video of the working hardware (YouTube or Panopto)

Upload Your Submission

Once you have all the evidence in place, login to CICRA VLE and mark the task as **Ready for Feedback**. The submission process will ask you to upload evidence of completion of the task. For quizzes, please include a screenshot showing your quiz

score. For Active Learning Session problems, you must submit evidence that you yourself had completed the activities. While working in groups/pairs is welcome, you must have evidence of your own contributions.
The system will also ask you to reflect on what unit learning outcomes have been achieved by this task.

Engage with Feedback

To get the task marked as **Complete**, you need to engage with the feedback you receive. Your tutor will review your submission and may ask you to clarify aspects of your learning, redo parts of the task, or include aspects you have missed. You may be asked to discuss the task in class or online. Use these discussions as an opportunity to help develop and validate your understanding.

If you are asked to resubmit, *make sure your subsequent submission includes a comment that describes how you have addressed the feedback you received*. This needs to demonstrate how you have addressed all the aspects indicated by your tutor in their feedback on your learning.