

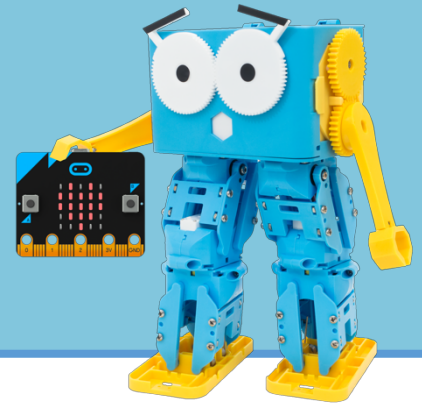
Lesson 1.22 – Fastest Reaction

Education Level: Second Level (Age 7-11)

Lesson Duration: 45 minutes

Prerequisite Knowledge: Lessons 1.1-1.14 & 1.19-1.20

Device Compatibility: Laptop, PC or Tablet



Lesson Overview

Students will be creating and building their own reaction game using the Micro:Bit to measure who has the fastest reactions. Except, there will be a twist! Marty will be placed in the middle of a game board so each time someone wins a round in the game, Marty moves one step closer to the goal. Students will need to consider the logic of deciding who has won each round of the game, how this will be displayed to users and how Marty will move along the game board.

Learning Objectives

- Consider how to decide who has the fastest reaction to a stimulus
- Create and code a new game using the Micro:Bit and Marty
- Consider how the user should interact with the Micro:Bit

Key Vocabulary

- Micro:Bit
- Reaction
- Infinite/Forever Loop
- If Statement
- Event
- User Interaction

Resources & Equipment

- Marty the Robot
- Marty Workbook (Lesson 4)
- Laptops/Computers/Tablets
- Access to the Scratch 3 editor
- BBC Micro:Bit
- Reaction game mat/board

Additional Reading

- Educator's Guide
- Introduction to Programming with Marty using Scratch
- BBC Micro:Bit Quick Start Guide for Teachers (<https://microbit.org/guide/quick/>)

Learning Plan & Activities

1. Start off by asking students to play a small reaction game themselves and think about how they decide who has reacted first and how accurate they think their decisions are
2. We are now going to create a similar game using Marty and the Micro:Bit which should be completed in teams of around 2-3 students per Marty. Students should be encouraged to test their solution after each step
 - a. After a random amount of time between 0 and 4 seconds, a symbol or image should flash up onto the LED display
 - b. Next, we need to check for a button click from the players and based on that we need to display a message or a symbol to show who won that round
 - c. Finally, we need to move our Marty on the game board appropriately based on who won
3. Students should challenge each other to test out their solutions and see who has the fastest reaction!

Additional Challenges

- How would we change the program to make it easier for one player or more difficult for the opponent?
- Reaction game tournament between teams in the class
- Extend the game to have other levels/different challenges such as click when the light is in the centre of the screen and whoever gets the closest wins or click when you think 30 seconds has passed, etc.

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

| Curriculum Organiser | Benchmark Covered | Lesson 1.22 |
|--|-------------------|-------------|
| Digital Literacy | TCH 0-01a | ● |
| Technological Developments in Society & Business | TCH 0-05a | ● |
| Craft, Design, Engineering and Graphics | TCH 0-11a | ● |
| | TCH 1-12a | ● |
| Computing Science | TCH 0-13a | ● |
| | TCH 1-13a | ● |
| | TCH 2-13a | ○ |
| | TCH 3-13a | ● |
| | TCH 3-13b | ● |
| | TCH 4-13a | ○ |
| | TCH 0-14a | ● |
| | TCH 0-14b | ● |
| | TCH 1-14a | ● |
| | TCH 1-14b | ● |
| | TCH 2-14a | ● |
| | TCH 3-14a | ● |
| | TCH 0-15a | ● |
| | TCH 1-15a | ● |
| | TCH 2-15a | ● |
| | TCH 3-15a | ● |
| | TCH 4-15a | ○ |

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

| Curriculum Organiser | Benchmark Covered | Lesson 1.22 |
|----------------------|---------------------|-------------|
| Computing | 1-a | ● |
| | 1-b | ● |
| | 1-c | ● |
| | 1-e | ● |
| | 2-a | ● |
| | 2-b | ● |
| | 2-c | ● |
| | 2-f | ● |
| | 3-a | ● |
| | 3-b | ● |
| | 3-d | ○ |
| | 4-a | ○ |
| | 4-b | ○ |
| | Design & Technology | 1.1-b |
| 1.2-a | | ● |
| 2.3-b | | ● |