

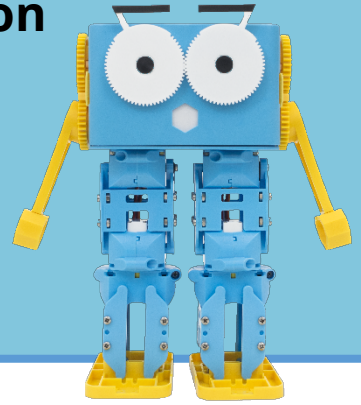
Lesson 3.1 – Programming Marty with Python

Education Level: Third/Fourth Level (Age 11-14)

Lesson Duration: 45 minutes

Prerequisite Knowledge: N/A

Device Compatibility: Laptop or PC



Lesson Overview

In this lesson, students get an introduction to Marty and how we can create and run commands that will move different body parts. Students should start to develop an understanding of the outcome of different coding commands on Marty and the environment that he is in. They should also start to gather a better understanding of the Python syntax.

Learning Objectives

- Run Python commands to move different Marty body parts
- Describe the outcome different commands will have on Marty and his environment

Key Vocabulary

- Python
- Coding
- Command
- Functionality

Resources & Equipment

- Marty the Robot
- Student Workbook (Lesson 1)
- Python editor (such as IDLE)
- Access to computers/laptops (with Python & MartyPy installed)
- *Marty Says* cards

Additional Reading

- Educator's Guide
- Getting Started with MartyPy

Learning Plan & Activities

1. Ask students to write down instructions for drawing a robot (drawing alongside each instruction what they imagine someone would draw)
2. Students should read out their instructions to a partner who will be drawing the robot from the instructions that they hear
 - a. Is the drawn robot similar to how the student thought it would be?
 - b. Swap roles so that both students get to test out their robot drawing instructions
3. Gather ideas from students on the kind of functionality they think that Marty will have by looking at him and investigating different body parts
4. Show students examples of a few different commands that can be used with Marty and ask them to predict what they think the outcome will be
5. Show students the documentation for the *MartyPy* library
6. Given some random *Marty Says* cards, get students to code Marty into that position using the commands described in the documentation

- Students come up with their own poses, draw these and then challenge the classmates to write code to recreate that pose, experimenting with the values that can be passed into commands

Additional Challenges

- Students can keep a journal detailing how each of the commands works – for example what values are needed for moving Marty's left arm upwards?
- Challenge students to move each individual body part using different commands/values to achieve this

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.1
Digital Literacy	TCH 0-01a	●
	TCH 1-01a	○
	TCH 0-02a	●
	TCH 1-02a	○
Technological Developments in Society and Business	TCH 0-05a	●
	TCH 1-05a	○
Craft, Design, Engineering & Graphics	TCH 0-10a	●
	TCH 0-11a	●
	TCH 1-11a	●
	TCH 2-11a	○
	TCH 1-12a	●
	TCH 3-12a	○
Computing Science	TCH 0-13a	●
	TCH 1-13a	○
	TCH 2-13a	○
	TCH 3-13b	○
	TCH 0-14a	●
	TCH 0-14b	●
	TCH 1-14a	●
	TCH 1-14b	●
	TCH 2-14a	○
	TCH 2-14b	○
	TCH 0-15a	○
	TCH 1-15a	○
	TCH 2-15a	●

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.1
Computing	1-a	●
	1-b	●
	1-c	●
	1-d	●
	1-e	○
	2-a	●
	2-c	●
	3-a	●
	3-b	○
	3-c	○
	3-e	●
	3-f	○
	4-a	○
	4-b	○
Design & Technology	1.1-a	○
	1.1-b	●
	1.3-a	○
	1.3-b	●
	2.1-a	○
	2.1-b	●
	2.3-b	●
	3.1-b	●
	3.1-c	●
	3.1-e	○
	3.3-c	●

Australian F-10 Curriculum – Digital Technologies, Design & Technologies

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.1
Digital Technologies	ACTDIK001	●
	ACTDIK002	●
	ACTDIP003	○
	ACTDIP004	○
	ACTDIP006	○
	ACTDIK008	●

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Design & Technologies	ACTDEK001	<input checked="" type="radio"/>
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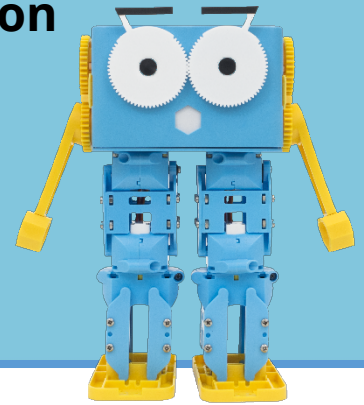
Lesson 3.2 – Exploring MartyPy Documentation

Education Level: Third/Fourth Level (Ages 11-14)

Lesson Duration: 45 minutes

Prerequisite Knowledge: Lesson 3.1

Device Compatibility: Laptop or PC



Lesson Overview

In this lesson, we follow on from the first lesson where students will have started to explore what different movements and functionalities Marty has. Students will continue to explore the documentation available for MartyPy and put together their own version whilst considering why documentation might be important.

Learning Objectives

- Build upon knowledge of movements and functionality Marty has
- Create their own version of the MartyPy documentation
- Explore the importance of documentation

Key Vocabulary

- Python
- Coding
- Testing
- Documentation

Resources & Equipment

- Marty the Robot
- Python editor (such as IDLE)
- Access to computers/laptops (with Python & MartyPy installed)
- Student workbook (Lesson 2)
- Revised MartyPy documentation for students

Additional Reading

- Educator's Guide
- Get Started with MartyPy
- MartyPy documentation

Learning Plan & Activities

1. Recap what was done in previous lesson, getting students to think about the different movements they programmed Marty to do
2. Ask students if they can remember the specific commands and values that were needed to program Marty into those poses that were just discussed
 - a. Why not? How did you find out what the different commands were that could be used with Marty?
3. Students should go through the MartyPy documentation in small groups and explore what each of the different commands do, slowly putting together their own handbook on how to use MartyPy in Python
4. In their handbooks, students should start to build up a useful note on the different commands and examples of how to use them
5. Ask student teams to swap their handbooks and test out a few of the different commands they have instructions for
 - a. Are they easy to follow? Is there anything missing that would make the documentation simpler to follow? How would the group add this in?
6. Allow the groups some time to make the changes that were suggested from the other teams

Additional Challenges

- Add videos or images to your handbooks and document your MartyPy programming for others to follow
- Run a short workshop with another class who haven't used MartyPy yet and get the students to take lead on explaining and teaching the other students how to use it (with the help of their handbooks of course!)

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.2
Digital Literacy	TCH 0-01a	●
	TCH 0-02a	●
	TCH 1-02a	○
	TCH 2-02a	○
Technological Developments in Society and Business	TCH 0-05a	●
Craft, Design, Engineering & Graphics	TCH 0-11a	●
	TCH 1-11a	○
	TCH 3-11a	○
	TCH 0-12a	●
	TCH 1-12a	○
	TCH 3-12a	○
Computing Science	TCH 0-13a	●
	TCH 1-13a	○
	TCH 2-13a	○
	TCH 0-14a	●
	TCH 0-14b	●
	TCH 1-14a	○
	TCH 1-14b	○
	TCH 2-14a	○
	TCH 2-14b	○
	TCH 3-14a	●
	TCH 0-15a	●
	TCH 1-15a	○
	TCH 2-15a	○

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.2
Computing	1-a	●
	1-b	○
	1-c	●
	1-d	○
	2-a	○
	2-c	○
	2-f	●
	3-a	●
	3-b	○
	3-c	○
	3-g	●
	4-a	○
	4-b	○
Design & Technology	1.1-a	●
	1.1-b	●
	1.3-b	●
	2.1-a	●
	2.1-b	○
	2.3-b	●
	3.1-a	○
	3.1-b	○

Australian F-10 Curriculum – Digital Technologies, Design & Technologies

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.2
Digital Technologies	ACTDIK001	●
	ACTDIK002	○
	ACTDIP003	
	ACTDIP004	○
	ACTDIK008	●
	ACTDIP009	○
	CTDIP010	○
	ACTDIP011	
	ACTDIP012	●
	ACTDIP013	○

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	ACTDIP038	<input type="radio"/>
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Design & Technologies	ACTDEK001	<input type="radio"/>
	ACTDEP010	<input type="radio"/>
	ACTDEP019	<input type="radio"/>

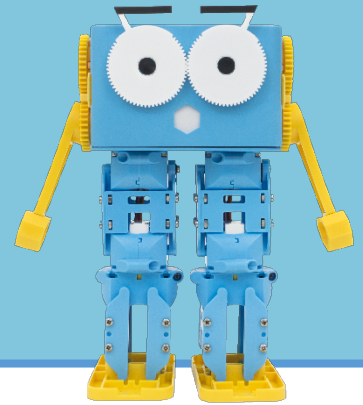
Lesson 3.3 – Marty Python Dance-Off

Education Level: Third/Fourth Level (Ages 11-14)

Lesson Duration: 45 minutes

Prerequisite Knowledge: Lesson 3.1 & 3.2

Device Compatibility: Laptop or PC



Lesson Overview

In this lesson, students will be putting together their first scripts using IDLE so that they can have a continuation of Python commands to control Marty. From doing this, students will start to build up a dance routine for Marty and have a small dance-off in the class.

Learning Objectives

- Create small Python scripts using IDLE or an equivalent editor
- Explore the use of combining multiple commands to get a sequence of movement happening

Key Vocabulary

- Python
- Coding
- Script
- Dance
- Movement

Resources & Equipment

- Marty the Robot
- Python editor (such as IDLE)
- Access to computers/laptops (with Python & MartyPy installed)
- Student workbook (Lesson 3)
- *Marty Says* cards

Additional Reading

- Educator's Guide
- Get Started with MartyPy
- MartyPy documentation

Learning Plan & Activities

1. Warm-up by getting students to create small sequences using the IDLE commands as before
 - a. Wouldn't it be great if we could type more than one command at a time and run them all in one go? This is where scripts are useful and should be used
2. Demo creating, saving and running the Python script in the editor that students will be using
 - a. Highlight best practices of where students should be saving the Python files
3. Challenge students to a dance-off
 - a. Agree to a song for the whole class and set a time limit for how long students have to work on their Marty dance routines
4. Bring all Marty's together and start the dance-off and get students to pick out their favourite dance routines, discussing with other groups what code they used for different moves

Additional Challenges

- Each team could choose their own song and demo their Marty dance individually
- Set some constraints for the dance off such as a minimum of 3 different body parts must move at some point during the routine

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.3
Digital Literacy	TCH 0-01a	●
	TCH 1-01a	○
	TCH 0-02a	●
	TCH 1-02a	○
Technological Developments in Society & Business	TCH 0-05a	●
Craft, Design, Engineering & Graphics	TCH 0-11a	●
	TCH 1-11a	○
	TCH 2-11a	○
	TCH 1-12a	●
	TCH 3-12a	○
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 2-14b	○
	TCH 3-14a	○
	TCH 4-14a	○
	TCH 4-14c	○
	TCH 0-15a	●
	TCH 1-15a	●
	TCH 2-15a	○
	TCH 3-15a	○

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.3
Computing	1-a	●
	1-b	●
	1-c	●
	1-d	●
	1-e	○
	2-a	●
	2-b	○
	2-c	●
	2-f	●
	3-a	●
	3-b	○
	3-c	○

	3-e	○
	3-f	○
	3-g	○
	4-a	○
	4-b	○
Design & Technology	1.1-a	●
	1.1-b	●
	1.3-b	●
	2.1-b	●
	2.3-b	●
	2.4-d	●
	3.1-b	●
	3.1-d	●
	3.1-e	○
	3.3-c	●

Australian F-10 Curriculum – Digital Technologies, Design & Technologies

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.3
Digital Technologies	ACTDIK001	●
	ACTDIK002	●
	ACTDIP003	●
	ACTDIP004	●
	ACTDIP009	●
	ACTDIP010	●
	ACTDIP011	○
	ACTDIP013	●
	ACTDIP017	○
	ACTDIP019	○
	ACTDIP020	○
	ACTDIP029	●
	ACTDIP030	○
	ACTDIP038	○
	ACTDIP039	○
	ACTDIP040	○
Design & Technologies	ACTDEK001	●
	ACTDEK002	○
	ACTDEP005	○
	ACTDEP006	●
	ACTDEP009	●
	ACTDEP015	●
	ACTDEP018	●
	ACTDEP025	○

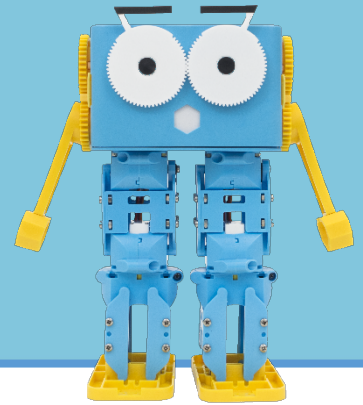
Lesson 3.4 – Shoot a Music Video

Education Level: Third/Fourth Level (Ages 11-14)

Lesson Duration: 45 minutes

Prerequisite Knowledge: Lesson 3.1 – 3.3

Device Compatibility: Laptop or PC



Lesson Overview

Continuing on from lesson 3.3 where students started to create some dance routines, we will be looking at creating a music video. Extending the dance routine covered in the last lesson, students will need to create a background scene for the video, select music and choreograph Marty's movements for the video.

Learning Objectives

- Create small Python scripts using IDLE or an equivalent editor
- Explore the use of combining multiple commands to get a sequence of movement happening
- Plan, design and choreograph movement, scenery and music to create a music video

Key Vocabulary

- Python
- Coding
- Script
- Dance
- Movement

Resources & Equipment

- Marty the Robot
- Python editor (such as IDLE)
- Access to computers/laptops (with Python & MartyPy installed)
- Student workbook (Lesson 4)
- Either printouts of backgrounds for the music video or pens/paper/whiteboard for drawing and creating a background
- Devices/cameras for recording the music video

Additional Reading

- Educator's Guide
- Get Started with MartyPy
- MartyPy documentation
- Marty Music Video activity post

Learning Plan & Activities

1. Introduce the theme of the lesson to students and assign the task of creating and shooting a music video for Marty
 - a. Highlight that they will need to think about the following – music choice, background/setting for the video, choreography of dance routine
 - b. They will probably want to reuse parts of their dance routine from the previous lesson
 - c. It might be useful for students to assign different jobs to the members of their group, for example, some students might want to focus on the choreography whilst others could be in charge of directing and thinking about scenery
 - d. You could set a time limit – for example a whole 3 minutes might be too long but 2 minutes of dancing would be a good amount and requires students to think about what part of the song they want to use
2. Student groups should start the work on planning and preparing their dance routine for recording
3. Remind students throughout the lesson of how long they have left to record their dance routines

- a. You may want a separate noise-free space for students to record their videos or just ask the class to be very quiet when one group is ready to record
4. If there is time, you might want to present the different videos created or you could do this at the start of the next lesson!

Additional Challenges

- Make some time for editing the videos, that way students can add special effects to their video and fix areas that they want to change
- Organise a time for students to demonstrate and show off their music videos to other classes or at a special assembly

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.4
Digital Literacy	TCH 0-01a	●
	TCH 1-01a	●
	TCH 2-01a	●
	TCH 0-02a	●
	TCH 1-02a	○
	TCH 2-02a	○
	TCH 0-03a	○
	TCH 2-03a	○
Technological Developments in Society & Business	TCH 0-05a	●
Craft, Design, Engineering & Graphics	TCH 1-09a	●
	TCH 2-09a	○
	TCH 3-09a	○
	TCH 4-09a	○
	TCH 1-10a	○
	TCH 0-11a	●
	TCH 1-11a	●
	TCH 2-11a	○
	TCH 0-12a	●
	TCH 1-12a	●
	TCH 3-12a	○
Computing Science	TCH 0-13a	●
	TCH 1-13a	○
	TCH 2-13a	○
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	TCH 3-13b	○
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	TCH 4-15a	○
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National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.4
Computing	1-a	●
	1-b	●
	1-c	●
	1-d	●
	1-e	●
	2-a	●
	2-b	○
	2-c	●
	2-f	○
	3-a	●
	3-b	○
	3-c	○
	3-e	○
	3-f	○
	3-g	●
	4-a	○
	4-b	○
Design & Technology	1.1-a	●
	1.1-b	●
	1.2-a	○
	1.3-b	●
	2.1-b	●
	2.2-a	○
	2.3-b	●
	2.4-d	●
	3.1-b	●
	3.1-c	●
	3.1-d	●
	3.1-e	●
	3.3-c	●
	3.4-d	○

Australian F-10 Curriculum – Digital Technologies, Design & Technologies

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Lesson 3.4
Digital Technologies	ACTDIK001	●
	ACTDIK002	●
	ACTDIP003	●
	ACTDIP004	●
	ACTDIP006	●
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Design & Technologies	ACTDEK001	<input type="radio"/>
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