

MARTY TEACHER GUIDE

Prompts and Questions to Support Delivery of Lessons

INTRODUCTION TO MARTY THE ROBOT

WHAT IS A ROBOT?

There are many definitions online but since this technology is still so new, there isn't one exact definition yet. Thinking about defining a robot can lead to asking what students believe are examples of robots and whether objects such as printers and washing machines are robots.

- What is a robot?
- How are robots different to computers and tablets?
- Is a printer a robot?
- Is a washing machine a robot?
- Can you think of any robots that you've seen or heard about before?

WHAT DOES A ROBOT DO?

After considering what a robot is, it's time to start thinking about what kind of tasks and jobs that robots do. Starting off with some examples that was mentioned previously, get students to think about what those robots do moving on to what they think they will be able to do in the future or what they would like a robot to do for them!

- You mentioned this robot, what does it do?
- What kind of places do robots work in?
- Why do you think we get robots to do these kinds of tasks?
- What do you think robots will be able to do in the future?
- Is there anything you would like a robot to do for you?

PAPER MARTY TASKS

Creating a paper prototype of Marty allows for students to plan out their programming steps in further lessons. This also allows for them to start thinking about the different parts that make up Marty so that when they come to programming, they will have a better idea of what they can manipulate.

- Encourage students to design their paper prototype to try and reflect their personality or the personality that they want their paper Marty to have

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INTRODUCTION TO PROGRAMMING

MARTY SAYS CARDS

There are a set of cards provided that show different poses and actions to get students to start thinking about what movements they can get Marty to do. From there they can either program other students in the class who are pretending to be a robot, or they can use their paper prototypes created in the previous lesson.

- Getting students to draw out some of their own poses for Marty to get students to recreate (using paper prototypes or later on whilst programming)
- String together more than one instruction/movement and work out what position Marty will be in at the end

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GETTING COMFORTABLE WITH SCRATCH

DEBUGGING

This lesson is set around getting students to think about the importance of testing their programs. While it may feel like something simple, it is often overlooked. Get started by asking students to talk in groups about why they think it is important to test their code and report back to the class.

- Who do you think has to test their programs?
- How do they test their programs?
- Do you think people should test their programs? Why?
- What do you think might happen if we don't test our solutions and programs?

REAL-LIFE EXAMPLES

It is important that we try to link what we are covering in the classroom to the outside world as much as possible so that students see the importance. There are many examples of when things have gone wrong because testing has either been overlooked slightly or has not been done in enough detail. You could set a small research task for students or present a few examples like these,

- **NASA** uses a lot of technology for their rockets but there have been problems with them once they have been set loose. For example, the unmanned **Mariner 1** rocket launched with the aim to explore Venus but not long after the launch, the rocket flew away from the intended flight path. The rocket was therefore destroyed. The reason for the rocket not following its path was due to a missing hyphen in the program allowing for incorrect guidance signals being sent to the spacecraft
- Another rocket story, the unmanned **Ariane 5** rocket was launched by the **European Space Agency** but exploded just 40 seconds after lift-off. The failure was caused by a software error when developers were trying to work out which way the rocket was pointing because a very large number had been assigned into a much smaller memory holder, causing things to go wrong as it couldn't calculate the correct values

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MARTY DANCE PARTY

CREATING DANCE MOVES

This is the first task that students have been given where they will get quite a lot of freedom in the programs that they create. Here are some tips to keep in mind so that students create something feasible within the allocated time period.

- Ask students to start off by breaking things down to individual movements, possibly using Marty Says cards as a starting point to slowly put together some moves before beginning to explore changing parameters for Marty's joints and speed of movement
- Give students a time limit to have their first dance ready to demo to the class
- In order to ensure that students are coming up with feasible ideas, maybe set a few rules such as your dance must include one slide and one kick