BAME Pack 1
Cultures & Celebrations

Welcome to the CGI BAME (Black, Asian and Minority Ethnic) STEM pack. This pack will introduce you to a range of cultures and celebrations around the world! Immerse yourself in the IT activities inside that are linked to various IT career paths. Learn about the Chinese Dragon Boat Festival, the Lunar cycle and different communities from across the globe. Look out for 'CGI BAME STEM Pack 2' – this will include profiles from our own CGI members.

Yi (Ye) Peng Lantern Festival:

Yi Peng is a light festival celebrated by releasing lanterns on the full moon of the twelfth lunar month ever year in Chiang Mai, Thailand – usually falling in November. An opening ceremony commences this sacred event, along with boat and hot-air balloon races! People of Thailand release lanterns into the sky to honour Buddha and ask for good fortune. The lanterns are released based upon the legend of a candle-carrying bird that visited Buddha to speak about merit. Each lantern lit and released into the sky represents peace, hope and unity.

STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS

Activity: Why is the sky blue?
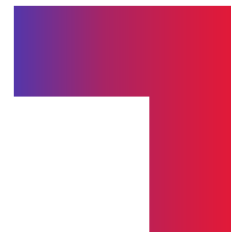
As we have learnt about the importance of releasing lanterns into the sky during Yi Peng, let's learn about how the sky gets its blue colouring.

You will need: **Torch, a glass and milk**

Overview

1. Fill a glass with water
2. Add a few drops of milk to the glass until cloudy
3. In a dark room point a torch at the glass from the side
4. Observe the glass from the side – see a hint of blue 'sky?"

Explanation

Light from the sun is scattered by gas and particles (in this case the milk represents the particles). Blue light has shorter wavelengths than other colours and is scattered more. This is why the sky is blue! Learn more **here.**

Activity: Make your own sunrise using Raspberry Pi

Overview

Now we have seen why the sky is blue – let's learn how to create your own sunrise using CSS. CSS stands for Cascading Style Sheets and is the language used to style a website.

What you will learn

- How to create an animated sunrise using CSS
- Add your own images, change the colour of the sky and animate the sun

You can access this activity here.

What is Front End Web Development?

CSS, HTML and Javascript are used to create websites and design the layout. This is known as front end web development.

Speak to your friends and family about roles within this area:

- Did you know a front end developer creates the website for online shops?
- Which companies need front-end developers?
- Could you be a front-end web developer when you grow up?

How can we keep websites and the information on them safe? We use **cyber security**

Let's learn more!

Ciphers are cool tools that can be used to hide or reveal a message. Along with being fun to solve, ciphers can be used in cyber security in the real world to keep information safe.

What is cyber security?

Cyber security is about protecting computers, programs, devices and data from attacks or unauthorised access.

Activity: Use the cipher to reveal the words and fill in the blanks

Ciphers can come in many forms and below is an example of a cipher using coordinates. Match the coordinates to a space in the table to reveal the words and fill in the blanks to learn about the festival of Carnival.

7	L			E		U	
6		N		B			O
5	Z				I		M
4		W		A			
3	V				R		P
2			H			C	
1	T		S		G		D
0	1	2	3	4	5	6	7

1. (6,2) (3,2) (5,3) (5,5) (3,1) (1,1) (5,5) (4,4) (2,6)

2. (1,7) (4,7) (2,6) (1,1)

3. (4,6) (5,3) (4,4) (1,5) (5,5) (1,7)

4. (4,7) (1,3) (5,5) (1,7)

5. (6,2) (7,6) (1,7) (7,6) (6,7) (5,3) (3,1)

Carnival is a western 1. _____ festival that occurs just before 2. _____. It is celebrated in many places which include, 3. _____, Greece, Egypt and the Caribbean. People dress in bright and eye-catching costumes, dance through their town and cities together and take part in shows. They celebrate in a loud and booming way to frighten 4. _____ spirits while they are fasting and to enjoy these luxuries before the lent period. Brazil is notably famous for this festival and places a greater emphasis on bright 5. _____and dancing!

Following on from the colourful festival of Carnival, have a go at one of the activities below to create an online colourful game on scratch. Why not try both if you would like a challenge?

Activity: Create an online game

You will need:

A computer capable of running Scratch 3 and Scratch 3 software, either online or offline.

(Please note, third party software should not be downloaded on CGI devices). Please check with your parent/guardian before downloading.

Beginner

Overview
Create a colourful catch the dots game.
Access the activity here.

What you will learn:
- How to choose random items from a list
- How to use variables to track speed, lives, and the player's score

Intermediate

Overview
Create a game in which you guide a parrot past scrolling pipes to win points.
Access the activity here.

What you will learn:
- How to create sprites using Vector mode
- How to use sounds
- How to detect collisions
- How to control a sprite using the keyboard

Did you know that game development is a real-life job? I think that is really cool.
If you enjoyed these activities and want to learn more then click here to try other activities that can introduce you to the fun world of coding!

Chinese Dragon Boat Festival

The Chinese Dragon Boat Festival takes place on China's beautiful rivers. Here is the story behind this annual event.

- There once was a minster called Qu Yuan (You-an), who lived in the state of Chi, China from 340-278BC.
- The King of China banned him from the state, after he was accused of offering bad advice.
- Qu fell in the local river and the locals tried to save him by throwing rice dumplings towards him, so the fish and evil spirits would eat the rice and not him.
- The search for Qu Yang became the Dragon Boat festival!

IT also includes **Testing**. This is needed to see if computer programs work as intended after all the coding is finished. Try this balloon-powered boat activity and test it afterwards to see if it works as it should!
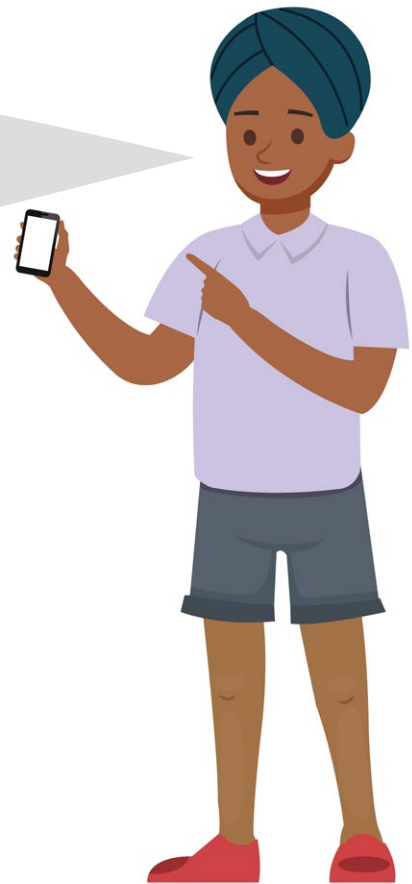
Activity: Create a balloon-powered boat

You will need:

A balloon, 1x kitchen sponge, 1x small plastic tube or straw, a small piece of string, a protractor, scissors, a ruler and a craft knife.

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1. Find the middle of your sponge and mark it with a pencil. Then use a protractor to mark the edges of your boat at 45 degrees.

 ← **Mark the points**

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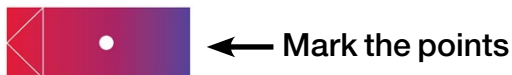
2. After marking these points, use scissors to cut the edges of the sponge and use a craft knife to create a vertical slit in the middle of the sponge.

 ← **Create this shape**

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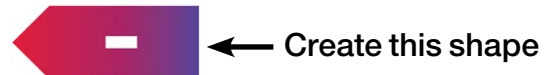
3. Stretch your balloon out and poke it through the vertical slit. Attach your plastic straw or tube to the end of your balloon. You may need to wrap a piece of string around the tip of the balloon on the plastic tube/straw to tighten it.

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4. Blow through the end of the straw/ plastic tube until the balloon is full of air. Place it in a sink, bathtub or tray full of water and release it. Your boat will now speed through the water!

In testing you could be a Video Game, Software or Application tester. Research more on the above roles to see which you prefer. Now you have seen how development and testing are important in IT - let's learn about how CGI is involved in Space in the next section!
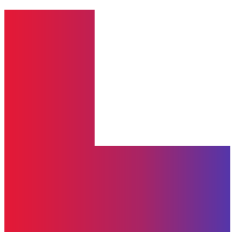
Buddah's Birthday

- In Buddhism, practiced by 1 in 10 people worldwide, the birth of the spiritual founder Prince Siddhartha Gautama (Buddah) is celebrated across Asia.

- Known as Vesak, the date of the celebration varies year to year based on the Lunar calendar and the Lunar cycle. It is celebrated on the full moon day of the month of Vesākha, usually in April or May.

- Though it is celebrated differently across the world, most countries follow similar traditions such as gathering at the local temple to sing hymns and make spiritual offerings, animals are often set free, and statues of Buddah are covered with flowers and water.
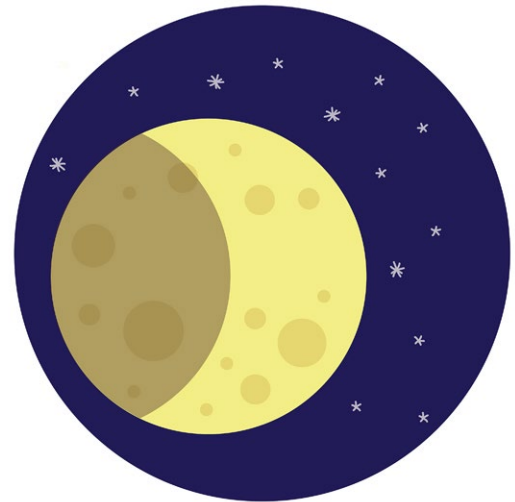
The Lunar Cycle
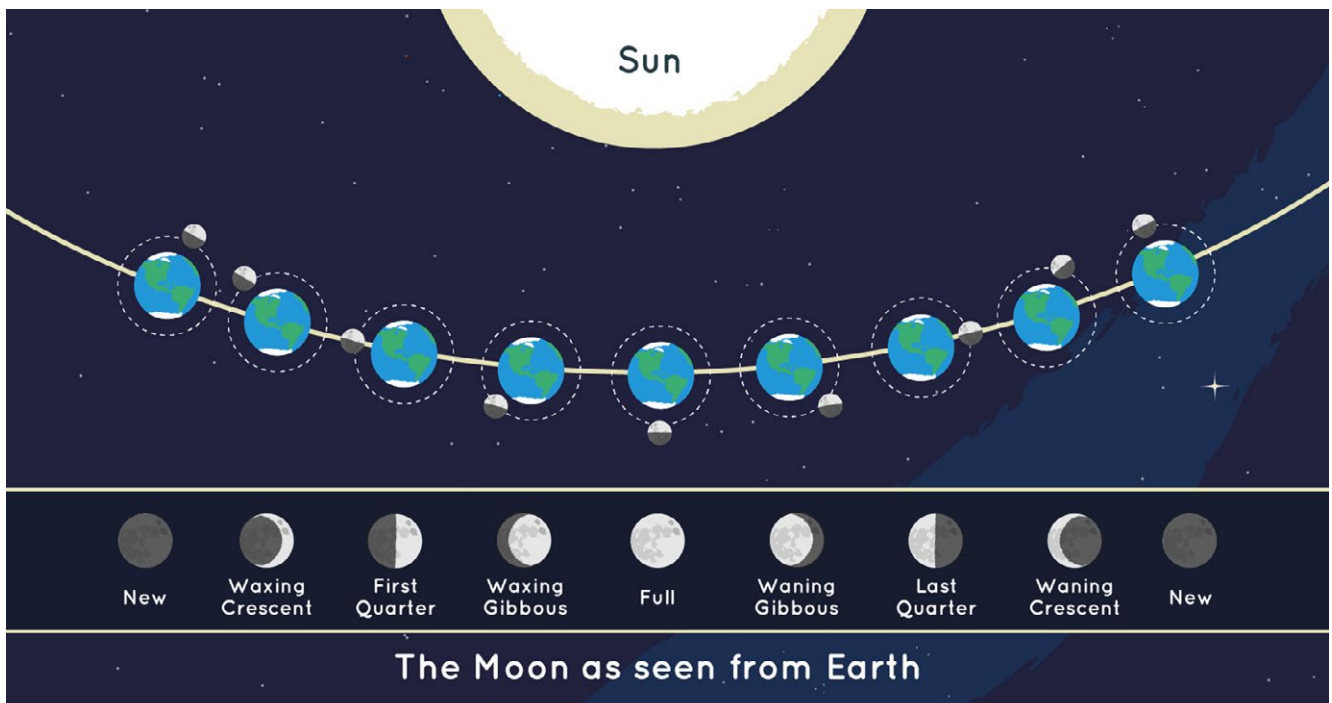
Credit: NASA/JPL-Caltech

Activity: Create your own Lunar Cycle Chart

You will need:

1x sheet of black paper or card, 1x sheet of white paper or card, 1x sheet of coloured paper or card, scissors, a ruler, a glue stick or tape, and a pen or pencil

1. Use scissors to cut your white and coloured paper into a 21cm square.

2. Using a small bowl, trace around the edge of the bowl in the centre of the coloured paper and cut this out carefully using scissors.

3. Above and below the circle, draw and label the phases of the moon from the diagram above.

4. Lay the coloured paper over the white and seal the top and bottom edges using glue or tape.

5. With your black paper in a landscape position, take the bowl and trace around it at both ends so the edge of the bowl touches the edge of the paper like this.

6. Using a pencil and ruler, draw a line from the top of one circle to the top of the other. Repeat for the bottom.

7. Cut along the lines you have drawn so that you are left with this shape.

8. Slide the black paper shape through the gap between the white and coloured paper.

9. Pull the black paper from left to right to see how we see the moon changes throughout its phases!

IT careers aren't only about programming, testing, or software development.
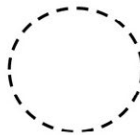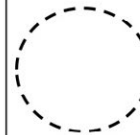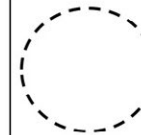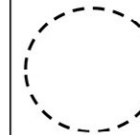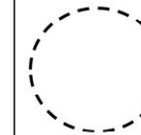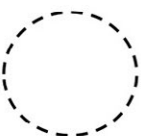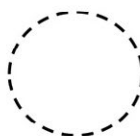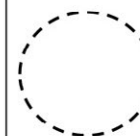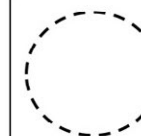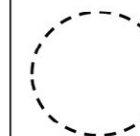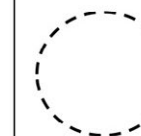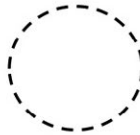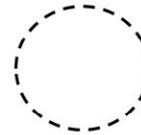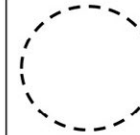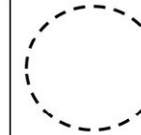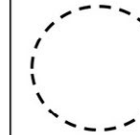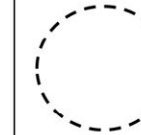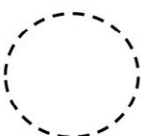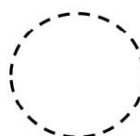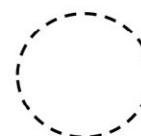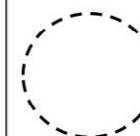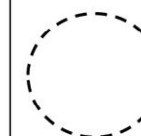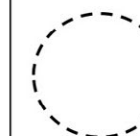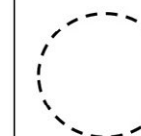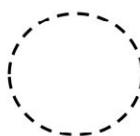
Did you know CGI help to put satellites into space?

A career in IT can take you anywhere! IT skills are incredibly valuable and they are needed in a range of different sectors, including Space.
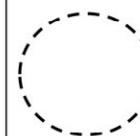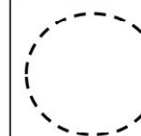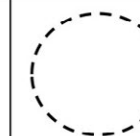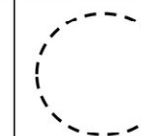
Activity: Moon diary

Fill out this Moon diary every night with a drawing of how to moon looks to see how it moves through each phase.

If there is too much cloud and you can't see the moon, could you guess what phase the moon might be in? Use the shape of the moon from the days before or days after to help you.

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
◯	◯	◯	◯	◯	◯	◯
◯	◯	◯	◯	◯	◯	◯
◯	◯	◯	◯	◯	◯	◯
◯	◯	◯	◯	◯	◯	◯
◯	◯	◯	◯	◯	◯	◯

We hope you enjoyed STEM Pack 1. Stay tuned for STEM Pack 2, where you will learn about CGI member stories and role-models in STEM, from a range of cultures, inspiring your future career path!

Ask your parent/guardian to upload pictures of your STEM creations to **Twitter**, **LinkedIn** or **Facebook** using **#STEMfromHome** and **#ExperienceCGI**, remember to tag us!

Thanks to our friends at Raspberry Pi for providing the coding activities in this pack. For more information or additional support with STEM activities when working remotely, please contact **enquiry.uk@cgi.com** © CGI IT UK Limited 2021