



Welcome to **Mission Mars**

Foundation Module - Part 1/2



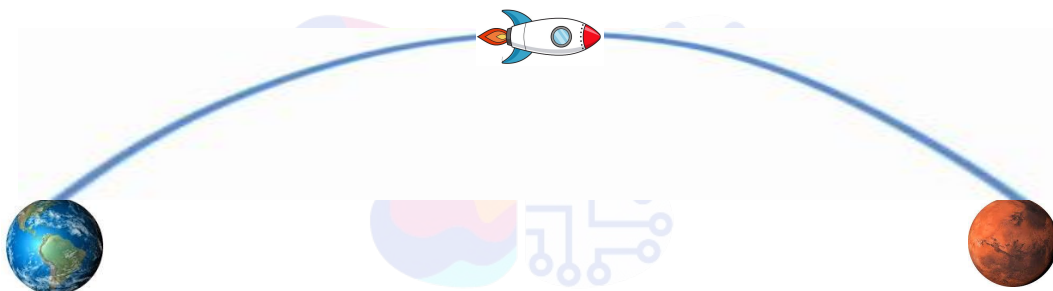
MODULE 1

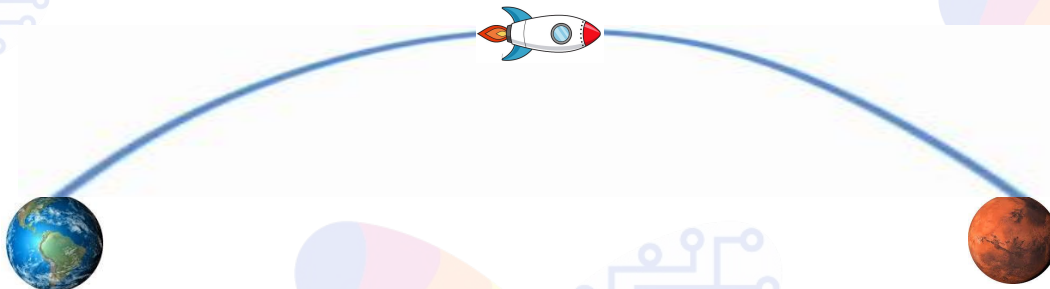


Any Idea What is Mission Mars?



It is a mission in which a Robot like mBot is sent to Explore Mars





**The entire journey of such a Robot
From earth to Mars is
Remotely controlled from Earth**

Any Idea How this is Done?

It is Done Through CODING



Let us see a daily life example



Say You are staying in Delhi

**& you want to visit your GrandParents in
Bengaluru**





It would involve a journey from Delhi To Bangaluru by air.

We can break the journey into small portions or activities. Ex:



- **Taxi to the airport.**
- **Check in.**
- **Security Check.**
- **Waiting to board.**
- **Boarding the aircraft.**
- **Aircraft goes to runway.**
- **Take off.**
- **Flight.**
- **Preparation to land.**
- **Landing.**
- **Baggage collection.**
- **Exit.**
- **Taxi to Grandpa.**
- **Ringing the doorbell.**
- **Hurray.**





In a similar way
to Learn about **MISSION MARS** we need to:

- **Break** the activities related to the journey from Earth to Mars in small groups called Modules.
- **Learn & Code** the modules separately.
- **Put them Together as a mission.**
- Do the Testing as a mock of the mission.
- **We are then all set to go.**



So our First module is

What is Coding & How do we start Coding?





Any Idea what is Coding?



When mBot



or a robot



or a machine



is made

Its brain is empty.

To work for humans, its brain needs to be filled with instructions.

Instructions that will tell it, what to do, when to do, & how to do.



For ex:

- This AC could be told that “**IF** room temperature goes above 27, **THEN** it should switch itself on.

All on its own.

- This language of **IF & THEN**



Which machines can understand

Is nothing but what humans call

“CODING”.



The Code for doing this task would be:



This is what we shall learn in this camp.



Another example could be:

Say we have a class of Robots. In this the robots could be coded:

- **IF** the teacher enters, **THEN** stand up and say “Good morning Teacher”.
- **WHEN** you hear “Sit down Children” **THEN** sit down & say “Thank you teacher”.
- Like this, the story & its coding could go on & on.

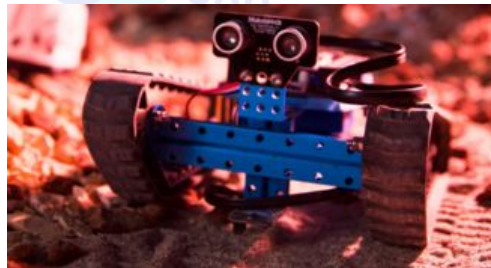




Similar ex in the case of Mission Mars could be:

IF obstacle is closer than 20 feet

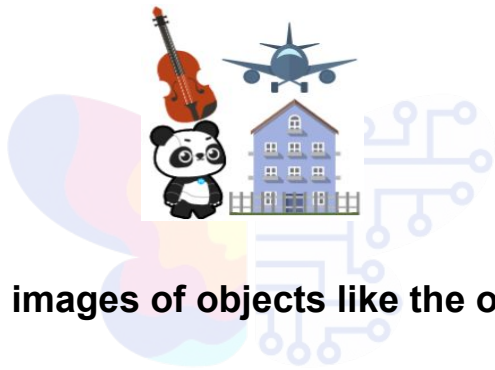
THEN Stop Mars Rover & Look around.





Let us now learn about Sprites

Any Idea what are Sprites?



Sprites are 2 D images of objects like the ones shown above

Can you give me an ex of a sprite around you?

For coding, they are kept in a place called the [Sprite Library](#)

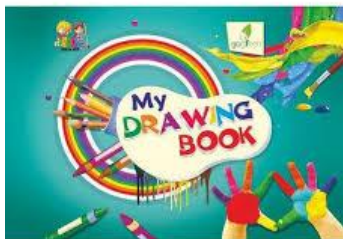


**Let us now learn about the “Software required
to Code”**

**This is also called “Coding
Environment”**



What is Coding Software?



To be able to draw, we need a drawing book.



To be able to play football, we need a football ground.



Similarly:

To be able to code, we need a **coding SW**.

This is that SW
It was downloaded to the tool bar of your PC





SCRATCH offers two main Coding SW's:

- **SCRATCH 3.0** - as developed by MIT.

Its icon is the Cat.



- **mBlock 5** – as development of Makeblock.

Its icon is the Panda.





Coding for **Mission Mars** will be done using **mBlock 5**





Working Options for Using mBlock 5

Option 1.

This is for coding using the SW version that you download on your mobile/tab.



mBlock mobile app

Learn coding in phones and tablets

Using this you will not be able to make use of all functionalities of the SW.

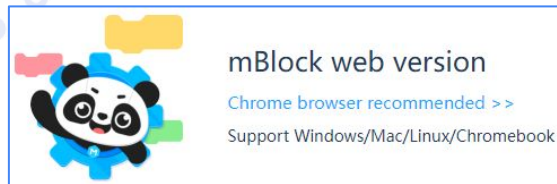


Option 2.

This is for coding using the web version of the SW. In this you will have to Code directly on the cloud.

For this you will need Internet while coding.

It is also called on-line coding.





Option 3

This is for coding using the SW that you download on your PC.

It is called off-line coding.



mBlock PC version

Version: V5.4.0

Released: 2021.11.30

[Released log >>](#) [Previous version >](#)



Option 3 is the preferred & most used mode.

During this camp, we shall use this option.



mBlock PC version

Version: V5.4.0

Released: 2021.11.30

[Released log >>](#) [Previous version >](#)



Ok Children any doubts till now



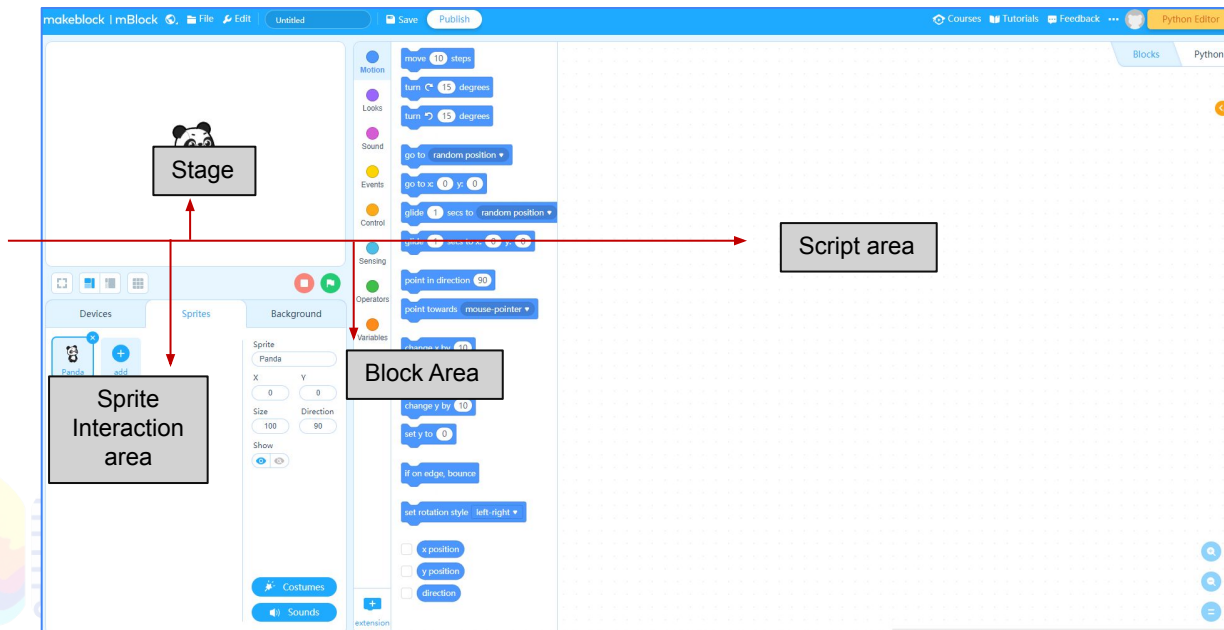
Understanding mBlock 5



Opening Screen of mBlock 5

This is the opening screen.

It's four important areas are.



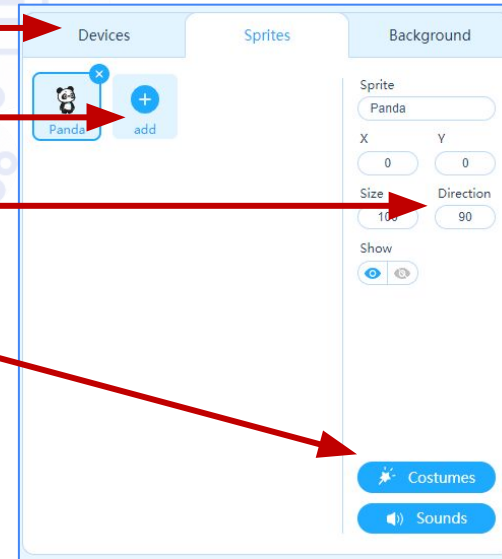


Understanding Sprite Interaction Area (SIA)



SIA has four important areas:

- 1. Device/Sprite selection area.**
- 2. Sprite addition & deletion area.**
- 3. Sprite Manipulation area.**
- 4. Sprite Costume & Sound area.**





1. Device/Sprite Selection Area

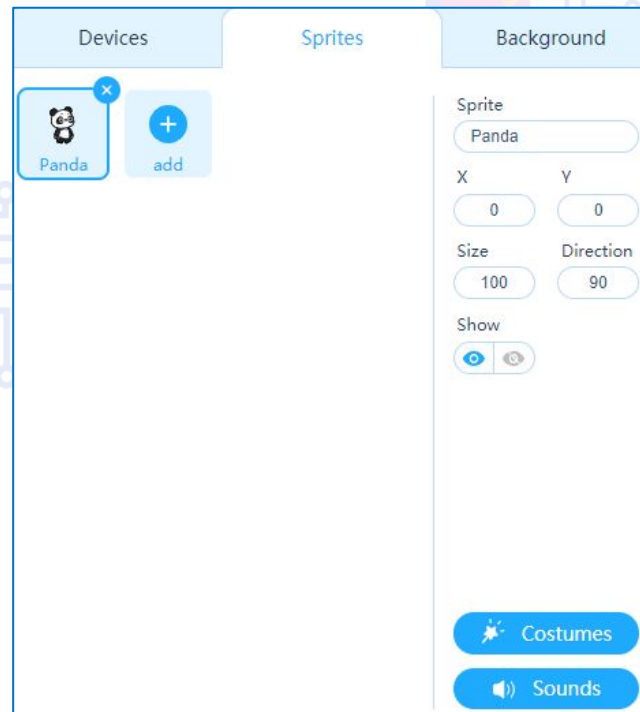


Focus on these three. →

They allow us to:

- **Select between** Devices & Sprites.
- **Add Background** to the stage.
- Note backgrounds are required only when working with sprites.

Let us now see this area on mBlock 5 SW.

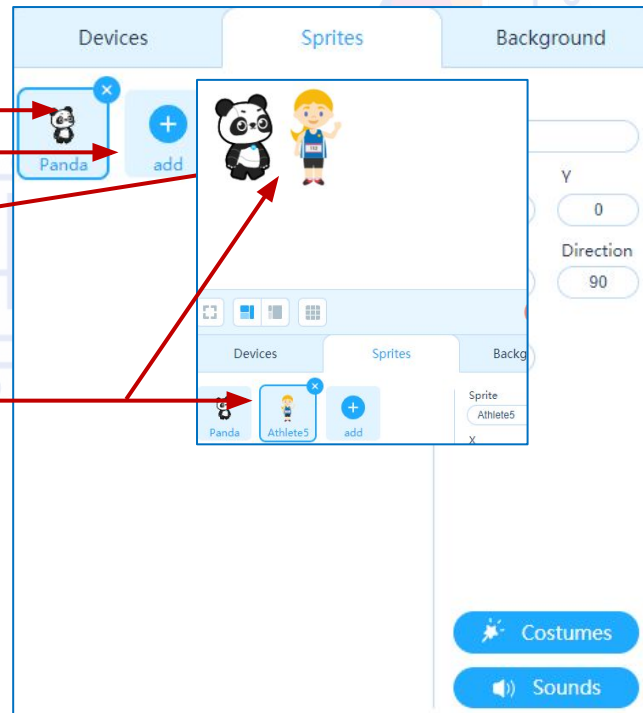




2. Sprite Addition & Deletion Area



- Icon to delete sprite.
- Icon to add sprite.
- Name of selected sprite appears.
- Added sprite appears in the interaction area & in the stage.
- We can add any num of sprites.



Let us now see this area on
mBlock 5 SW.

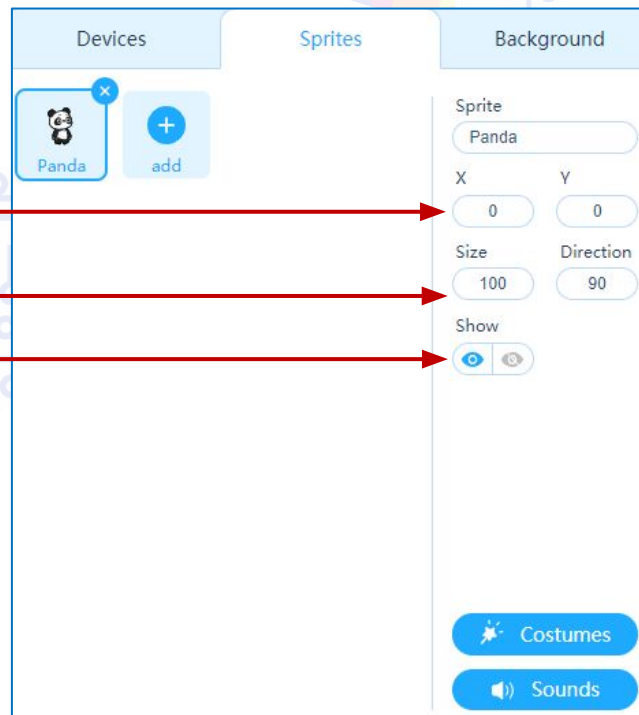


3. Sprite Manipulation Area



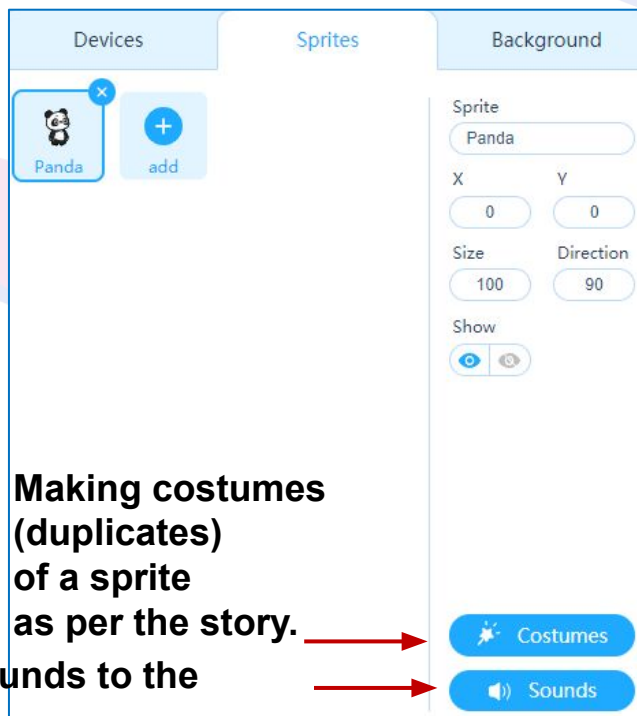
- Positioning of sprite in x/y axis on the stage.
 - Changing size & orientation.
- Enabling a sprite to hide or reappear on the stage as per the story of the code.

Let us now see this area on mBlock 5 SW.





4. Sprite Costumes & Sound Selection Area



**Making costumes
(duplicates)
of a sprite
as per the story.**

**Adding different types of sounds to the
code.**

**Let us now see this
area on mBlock 5 SW.**



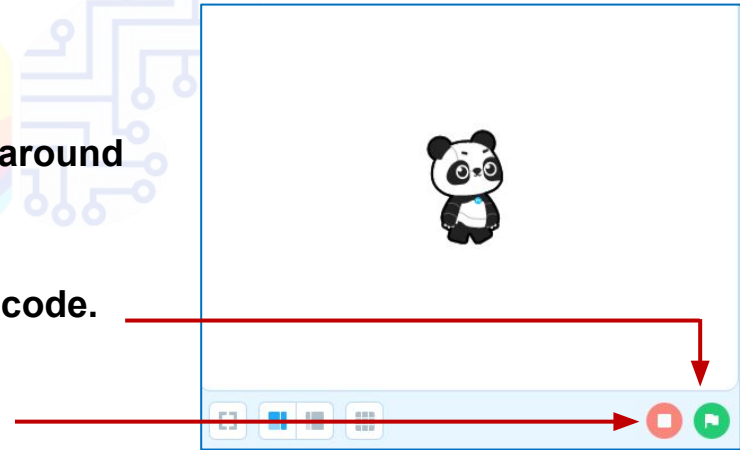
Understanding the Stage



This is the area in which Sprite executes the code.

In this:

- Your cursor can move the sprite around the stage.
- Green flag is an **Event** to run the code.
- Red icon is to **stop** the execution.





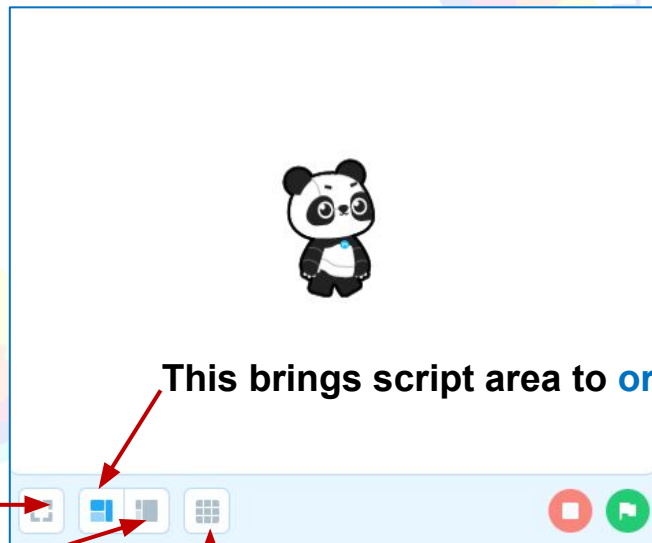
This icon is to **enlarge the stage** to full size & also to **revert back**.

This brings script area to **original**.

This **enlarges** script area.

This gives an **overlay of grid lines**.

Let us now see this area on mBlock 5 SW.





Ok Children any doubts till now



Lesson Learning

In Part 1 of Module 1 we have learnt the following:

- What is Mission Mars?
- What is Coding?
- What are Sprites?
- Choices of Coding Software (SW).
- Key areas of mBlock 5 SW.
- Understanding the Sprite Interaction Area.
- Understanding the Stage.



To Do

1. **Do read** lessons 1, 2 & 4 of the book Coding Essentials Vol 1 Scratch.
2. **Practice the procedure** of adding & deleting sprites.





End of Part 1 Module 1



Code Karega India Badhega