Lesson 4 – Choices of Coding Environments

Who Designed Scratch

Scratch was:

- Launched in May 2007.
- It was developed by Mitchel Resnick
  - ✔ Leader of Lifelong Kindergarten Group
  - ✔ Part of Media Lab of MIT.

Want to be a part of MIT Media Lab?

Kindly read on

Who Can Learn Scratch

Scratch has been Designed to enable six year old code.

- **Can you:**

  ✔ **Identify**
  the shape & colour
  of these block.

  ✔ **& Read what is written on them in English.**

- **If yes, then you can Code.**

Problem of Communicating with Machines

Programming means giving instructions to machines.

The problem is:

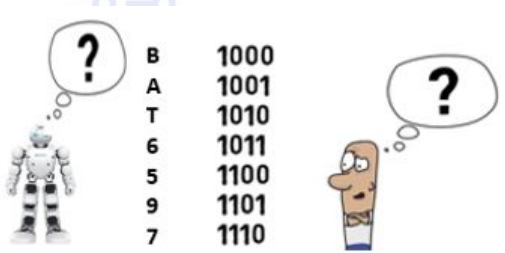
- Humans speak & understand English & Decimal Numbering. **Apples - 48**
- Machines only speak & understand 0 & 1. **1001 1100 1100 1110 0010 0111**

This language of 0 & 1
that machines understand
is called Binary.

Solving the Communication Problem

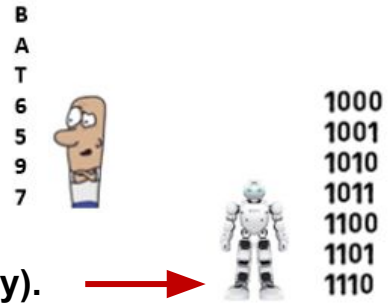
Diagrammatically:

This is the Problem.



To be able to talk to machines, we must:

- **Convert** our instructions in English
- To instructions in machine languages (Binary).
- This can be a very **laborious & difficult** task.



Since Scratch is designed for use by small children

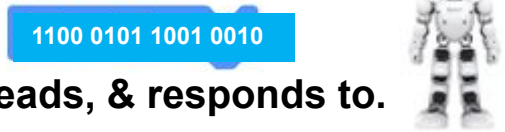
its designers have removed this problem.

Let us see How?

In Block based coding:

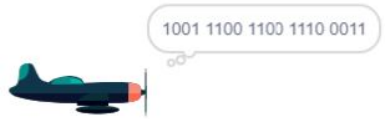
- **One side** of the block has instructions in English & numbers.
- This is the side the humans see, & code with.

- **Its reverse** has same instructions in 0 & 1 (in Python language).
- This is the side the machine sees, reads, & responds to.



Luckily sprites can:

- Read & make sense of these 0&1.



- In so doing:
  - ✔ The child is freed of conversion problems.
  - ✔ This makes Sprite the easiest coding language to learn.

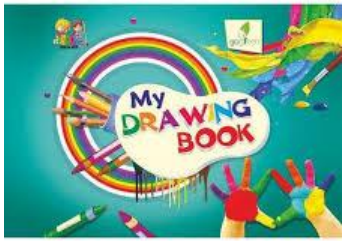
Now Try it Yourself

01001000 01100101 01101100 01101100 01101111 00100001
in Binary may mean nothing to you.

Google & find out
what it mean to a machine in English.

It means Hello World

Coding Environments



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

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

In the same way to be able to code, we need a coding SW.

This SW is referred to as the Coding Environment.

Every coding language has its own Coding Environment

The coding environment that we will use, will allow us to code in Scratch

Choice of Coding Environments for Scratch

SCRATCH offers two main environments:

- **SCRATCH 3.0** as developed by MIT.
  Its icon is the Cat.

- **mBlock 5** – Scratch inspired development of Makeblock.
  Its icon is the Panda.

Between the two, mBlock 5 is the preferred environment for learning.

Its advantages include:

- **Ability to work with devices & sensors.**
- **Create our own libraries.**
- **Larger collection of blocks & block statements.**
- **Learn Python & Embedded C in addition to Scratch.**

To Consolidate

Answer the following questions:

- Who invented Coding Language SCRATCH?
- Would you like to go to MIT?
- What is a Coding Environment?
- Why is mBlock 5 Preferred for learning?

End of Lesson 4

Code Karega India Badhega