



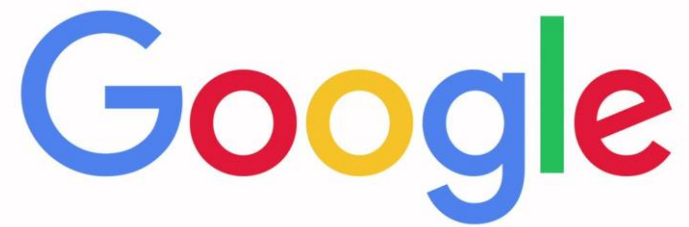
Topic 3

Algorithms and Flow Diagrams



A solid orange vertical bar is positioned on the left side of the slide.

What is an algorithm?



Algorithm

An algorithm is a set of steps that define instructions to complete a task.

They must be:

- **Precise:** Executed in order is important.



- **Defined:** Repeatable, consistent results



- **Finite:** With a clear begin and end



FULL WINDSOR KNOT

How to Tie a Necktie - 3 of 17



Robot prepares the perfect burger?



Does the Creator V1 Burger Maker know how to cook?



Creator's V1 Burger Maker

Algorithm for Hot Cakes



- 1. Mix flour, eggs and milk in a container**
- 2. Mix**
- 3. Pre-heat pan**
- 4. Pour the mix into the pan**
- 5. Flip the hot cake**
- 6. Enjoy!**

- How much flour?
- How many eggs?
- How much milk?
- How long do you have to mix the ingredients? How? In what direction?
- How do you turn on the stove?
- What temperature do you need to pre-heat the pan?
- How do you pour the batter into the pan? For how long?
- What size of hot cake do you want to make?



By following an algorithm step-by-step, the computer does not have to understand what is going on



Algorithm Design

The **computer** does not need to understand an algorithm, as long as it can execute it.

A good **programmer** has to understand all aspects and details of the algorithm.

The job of a programmer is to **translate algorithm steps into lines of code.**

**Designing
algorithms is
highly creative
work**



How can we represent an algorithm?

Flow chart

Pseudocode