

## Example #1:

Riding a bicycle.

### Decomposition:

Here the given example can be broken down into:

- Holding the bicycle.
- Pedaling using legs to ride the bicycle.
- Turning the handle bar in order to turn the bicycle.

### Pattern Recognition:

The pedaling action is a repeatable action. In order to move the bicycle, we perform pedaling repeatedly until we reach the destination.

### Abstraction:

In the pedaling action, we push the pedals of the bicycle forward repeatedly and alternately. So defining this entire series of movements as a pedaling action is called abstraction.

### Algorithm:

Steps to ride a bicycle.

- Unlock the bicycle if it is locked.
- Hold the handle bar with two hands
- Sit on the seat of the bicycle.
- Put both the feet on the pedals
- Start pushing the pedals forward one after the other.
- Whenever you want to turn, turn the handle bar in the same direction.
- Repeat the previous two steps until we reach the destination.

## Example #2:

Paying the price of groceries using the UPI app at a general store.

### Decomposition:

The above example can be broken down into multiple parts such as:

- Calculate the total amount of groceries.
- Transferring the money using the UPI app.

## Pattern Recognition:

Here adding the cost of each item in the list of groceries is a repeatable process. So it is a pattern we are repeating until we get the total amount of all the groceries.

## Abstraction:

The second step can be broken down into low level steps such as:

1. Opening the UPI app.
2. Scanning the QR Code.
3. Entering the amount to transfer.
4. Entering the bank passcode.

The same steps can be grouped together as high level steps such as:

1. Using the upi app to scan the QR code.
2. Entering the amount and authenticating it, to make the transaction.

## Algorithm:

- Repeat the below step until all the cost of items are calculated:
  - Add the cost of each item.
- Unlock the phone.
- Open the UPI App (Paytm, Phonepe, GPay etc).
- Scan the QR Code.
- Enter the amount.
- Authenticating the transaction by entering the passcode

## Example #3:

Searching for a video and watching it on youtube.

## Decomposition:

The above example can be broken down into:

- Unlocking the PC.
- Opening the browser window.
- Searching for the video in the youtube search bar and clicking on the results.

## Pattern Recognition:

Here we type each of the letters by pressing the keys on the keyboard. This is a repeatable action until we fully type the text to search.

## Abstraction:

Searching a video can be broken down into multiple low level steps such as:

- Opening the youtube website first
- Clicking on the search bar and typing the text.
- Clicking on the search button to search the video.

So these actions are combined together and we call it “searching a video”. This is called abstraction.

## Algorithm:

1. Unlock the pc by typing the password.
2. Click on the browser icon (such as google chrome, edge or firefox etc).
3. Click on the search bar in the browser window and type “youtube.com”.
4. Click on the search bar in the youtube page and type the name of the video.
5. Click on the search button to get the search results.
6. Click on the title in the results page to get the relevant video in order to watch the video.
7. If there is an ad then click on the skip button at the bottom right corner to skip the ads and the video to appear on the screen.