**TRAIN SIGNALLING SYSTEM**

We are designing a Train Signalling System to ensure that trains run on the same line smoothly without any collision.

For this, we have divided the space between 2 consecutive **stations** into multiple **blocks** where a block signifies the space between 2 consecutive **signals.**

**Station Station**

**A B**

**S0 S1 S2 S3**

**|<--------B0---------------->|<------- B1----------------->|<------ B2----------------->|**

In the above diagram, S0, S1, S2, S3 are **Signals**. Signals S0 and S3 are at Stations A and B respectively.

B0, B1 and B2 are the **Blocks**.

Assume that there are 2 trains moving from Station A to Station B. They are on the same line; one directly behind the other.

Assume that initially all signals are **Green.**

**Story 1:**

The first train moves from S0 to S1. Thus, it now occupies Block B0.

This should turn **Signal S0 to Red.**

The Red S0 signal will indicate to the lagging train that it has to wait till Block B0 is free.

**Story 2:**

The first train moves from S1 to S2. Thus, it exits Block B0 and now occupies Block B1.

This should turn:

* Signal **S1** to **Red**
* Signal **S0** to **Yellow**.

The Yellow S0 signal will indicate to the lagging train that **the next block** (B0 in this case) **is free** and it can proceed further to that block with caution.

**Story 3:**

The first train moves from S2 to S3. Thus it exits Block B1 and now occupies Block B2.

This should turn:

* Signal **S2** to **Red**
* Signal **S1** to **Yellow**
* Signal **S0** to **Double Yellow.**

The Double Yellow S0 signal will indicate to the lagging train that the next 2 blocks (B0 and B1) are free and it can safely traverse 2 blocks.

**Story 4:**

The first train exits Station B. Thus it exits Block B2.

This should turn:

* Signal **S3** to **Red**
* Signal **S2** to **Yellow**
* Signal **S1** to **Double Yellow**
* Signal **S0** to **Green**.

The Green S0 signal indicates to the lagging train that the line from Station A to Station B is clear.