SECTION A

PLC APPLICATION

EXAMPLE- BOTTLE FILLING

Question:

Construct a conveyor carrying empty bottle. When switch is in ON condition, the conveyor starts to move. When it reaches the filler unit, the empty bottle should be fully filled. When it reaches the topper unit, the fully filled bottle must be capped or topped. After that the bottle must be send to packing unit. When 3 bottles arrives to the packing unit, it must be packed together and send to the storage unit or delivery unit.

Answer:

i. Open Wonderware InTouch software and create a new file. Thus a new window appear known as Window maker.

ii. Drag the required components from the Symbol factory and construct the bottle filling unit according to the question.

iii. Give separate tag names to each and every component. Note that switches must be in Memory discrete and the moving components must be in Memory real.

iv. After that write down the initial condition in the On Show according to the syntax.

v. After writing the On Show, write down While Show as required by the question.

vi. Assign the speed to 1ms or greater values.

vii. Validate it and check the errors.

viii. After clearing the errors, go to runtime. Thus a new window known as Window Viewer appears and we can see the animated result of the question.

On Show

s = 0;

b1 = 0;

b2 = 0;

b3 = 0;

f = 0;

c = 0;

b = 0;

Note:-

Where, s = Switch

b1 = Bottle 1

b2 = Bottle 2

b3 = Bottle 3

f = Filling machine

c = Topper or Capping unit

b = Packing Box

While Show

```
IF s == 1 AND b1 <= 500 THEN
    b1 = b1 + 10;
ENDIF;
IF b1 == 170 THEN
    f = f + 100;
ENDIF;
IF b1 == 180 THEN
    f = f – 100;
IF b1 == 320 THEN
    c = c + 100;
ENDIF;
IF b1 == 330 THEN
    c = c – 100;
IF s == 1 AND b1 > 499 AND b2 <= 500
    THEN
    b2 = b2 + 10;
ENDIF;
IF b2 == 170 THEN
    f = f + 100;
ENDIF;
IF b2 == 180 THEN
    f = f – 100;
ENDIF; IF b2 == 320 THEN
    c = c + 100;
ENDIF;
```

```
IF b2 == 330 THEN
    c = c – 100;
IF s == 1 AND b2 > 499 AND b3 <= 500
    THEN
    b3 = b3 + 10;
ENDIF;
IF b3 == 170 THEN
    f = f + 100;
ENDIF;
IF b3 == 180 THEN
    f = f – 100;
ENDIF;
IF b3 == 320 THEN
    c = c + 100;
ENDIF;
IF b3 == 330 THEN
    c = c – 100;
ENDIF;
IF b3 >= 499 THEN
    b = b + 10;
    b1 = b1 + 10;
    b2 = b2 + 10;
    b3 = b3 + 10;
END IF;
```
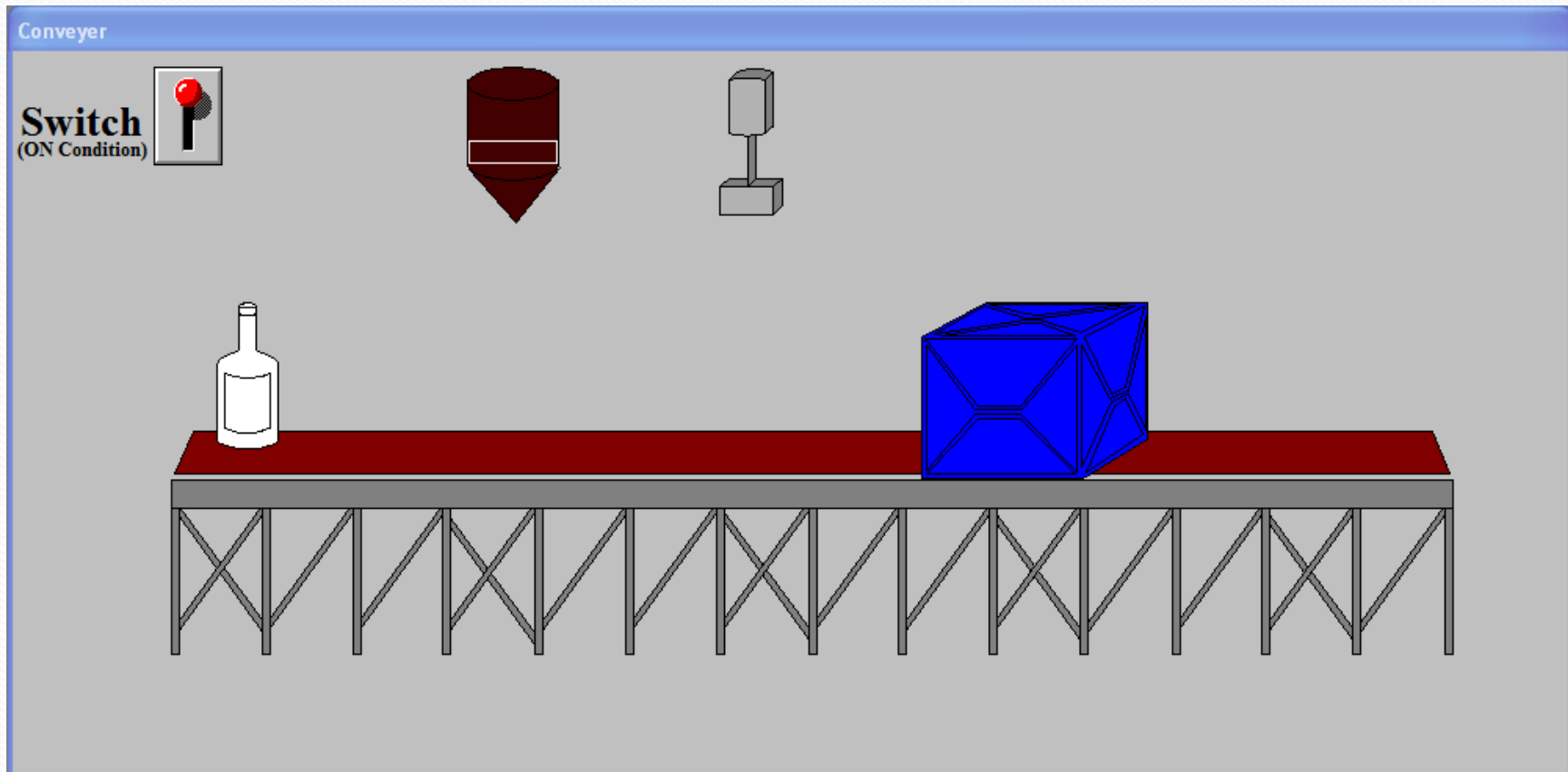
InTouch Window Viewer
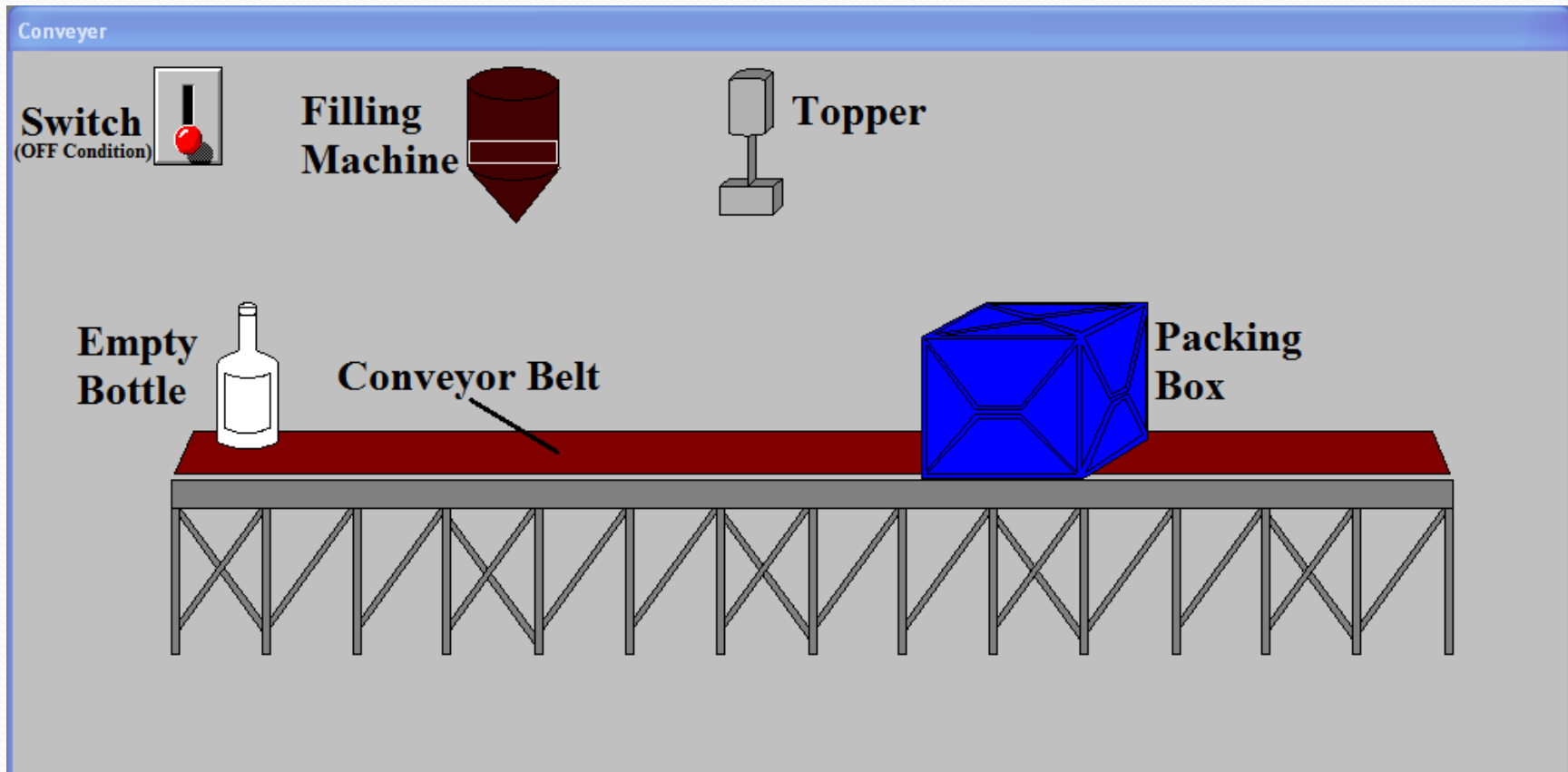
Initial Condition:

When the switch is in OFF condition, the conveyor belt, filling machine, topper and the packing box are also in the OFF condition.
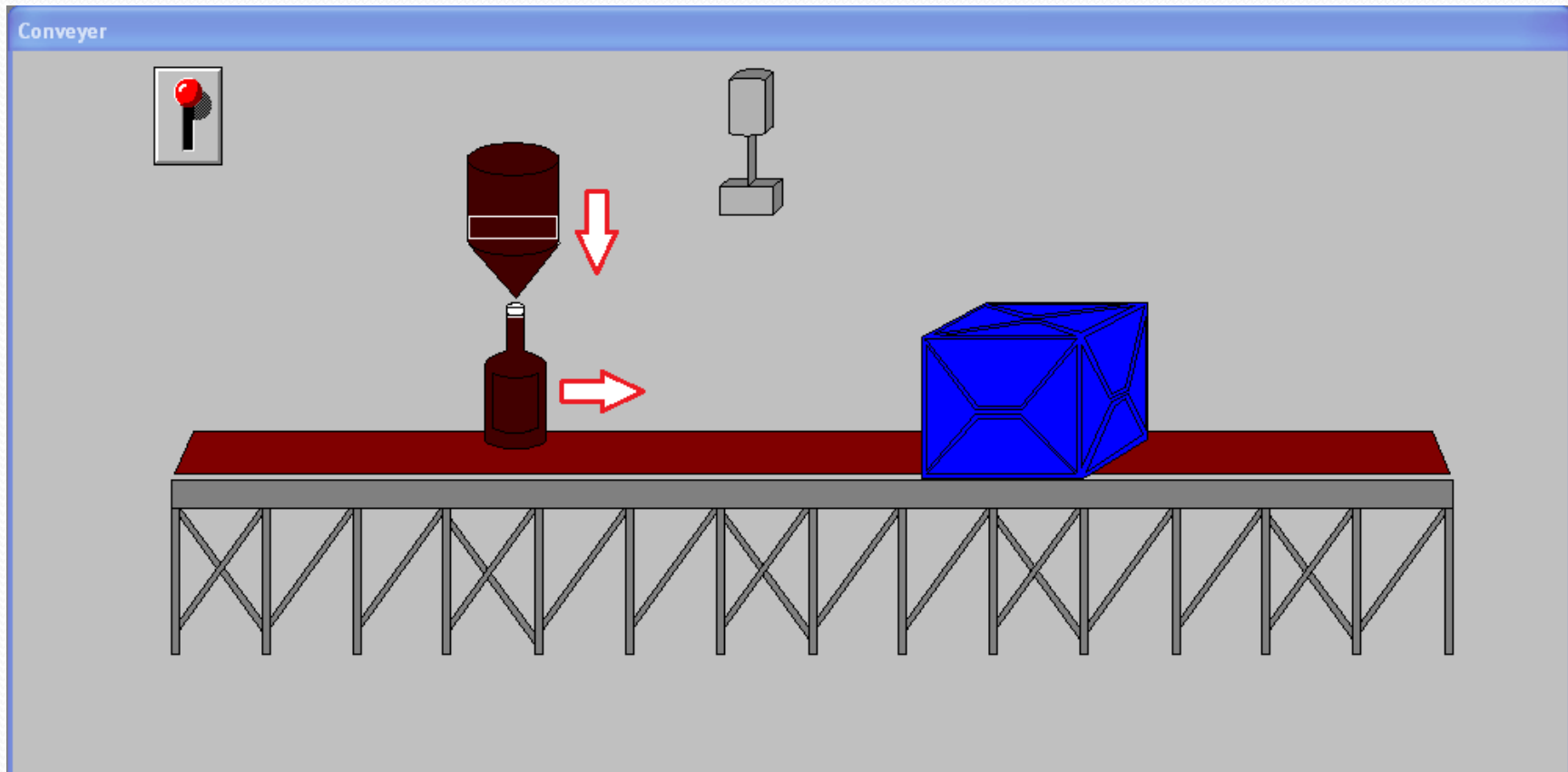
InTouch Window Viewer

Working Condition:
When the switch is in ON condition, the conveyor belt starts to move the empty bottle 1 place above also moves along with it.
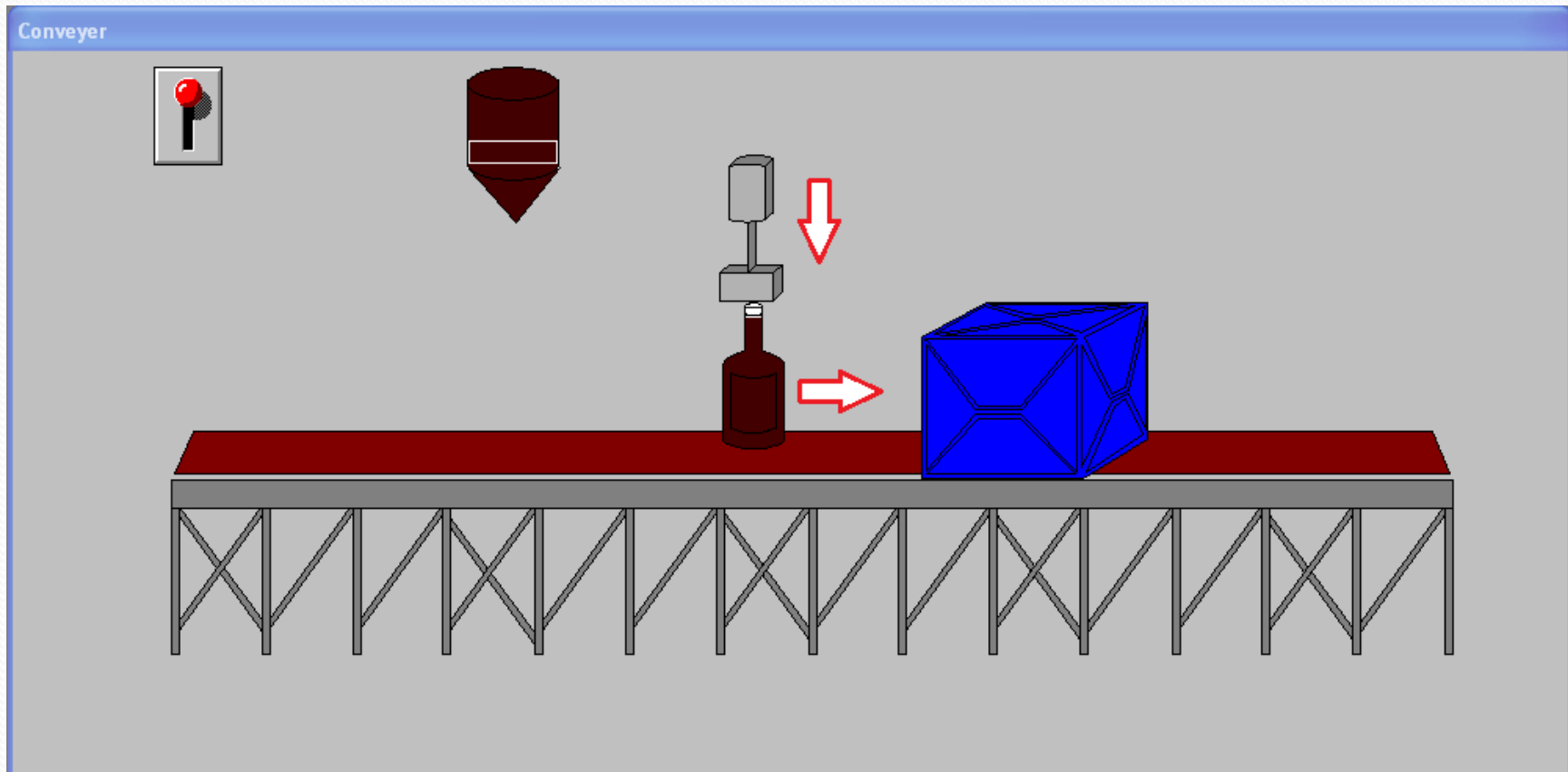
InTouch Window Viewer

Working Condition:

When empty bottle 1 reaches the filler, it stops there until the bottle 1 get fully filled and after that it move towards the topper.
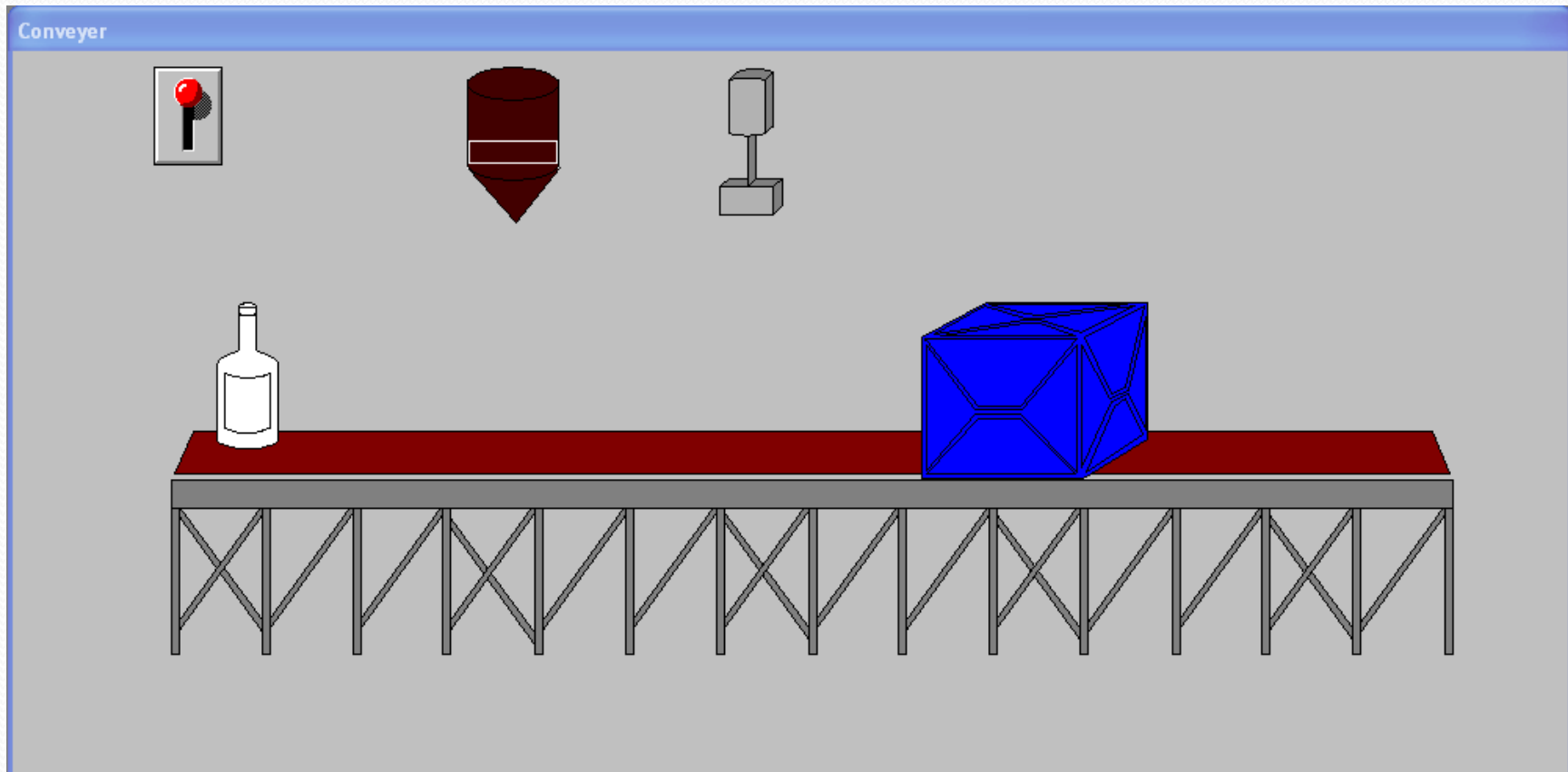
InTouch Window Viewer

Working Condition:
When fully filled bottle 1 reaches the topper, it stops there until the bottle 1 capped with the top and after that it move towards the packing box.
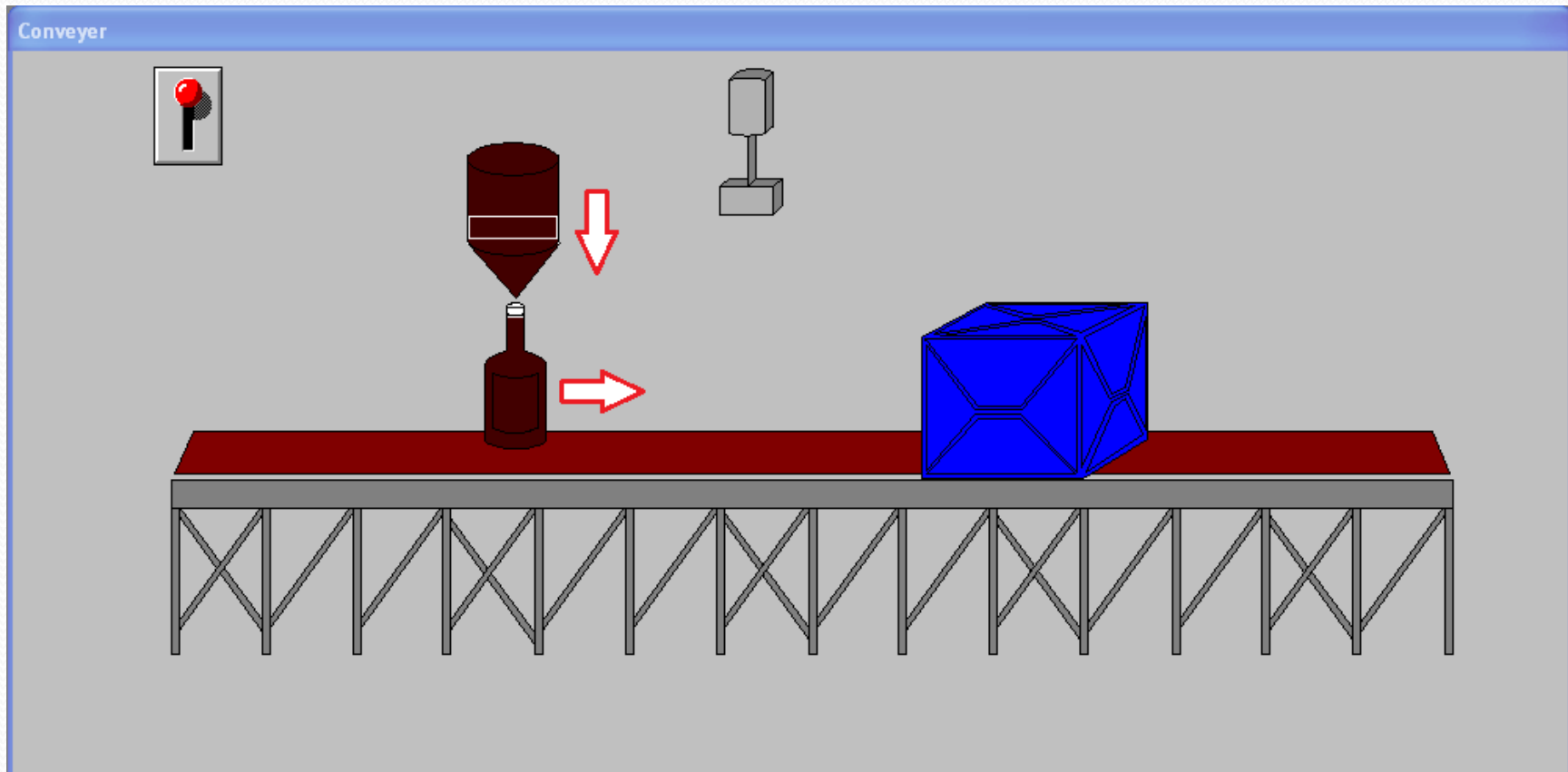
InTouch Window Viewer

Working Condition:
When bottle 1 is packed, bottle 2 is placed over the conveyor belt and it move towards the filler.
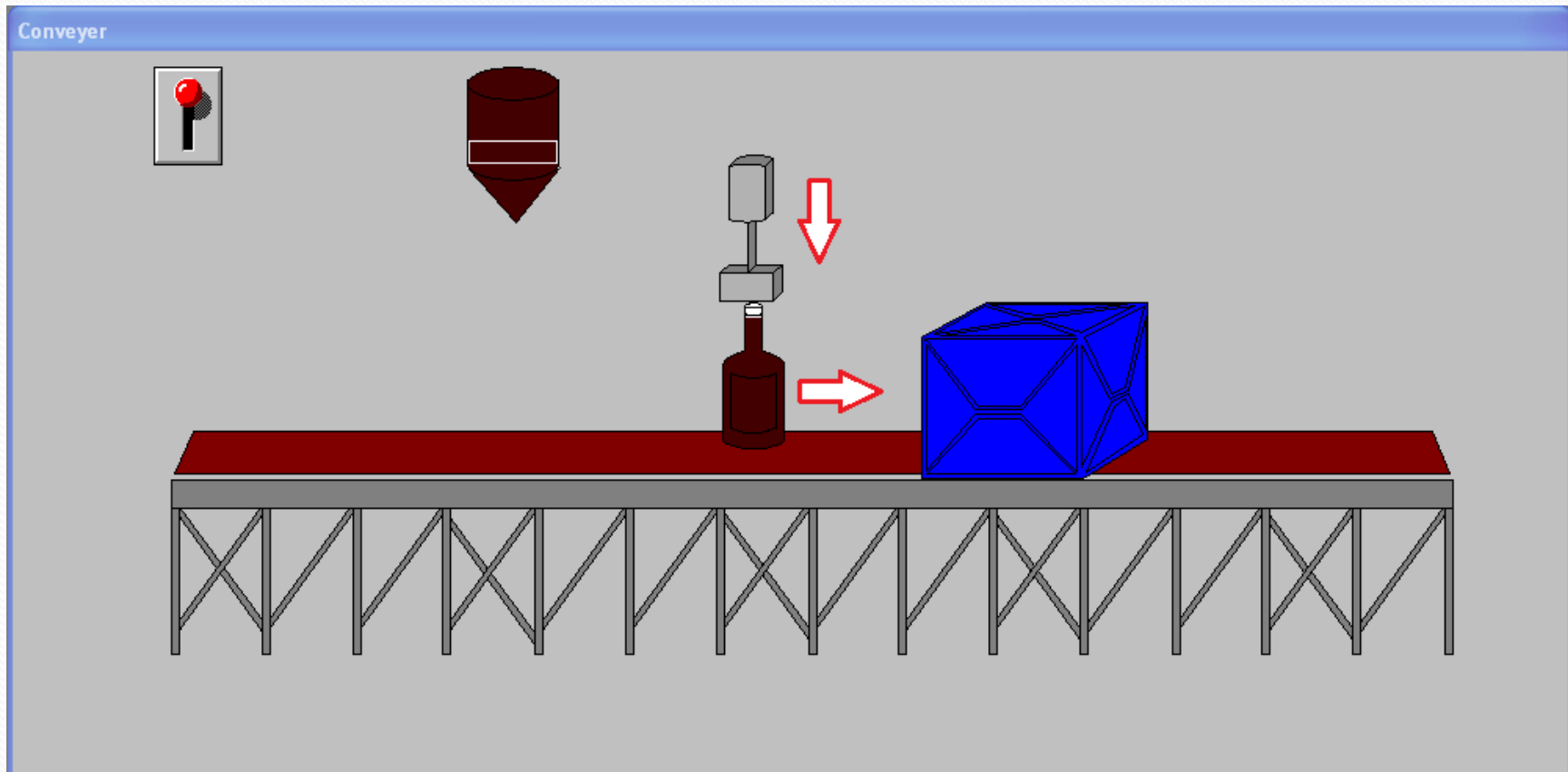
InTouch Window Viewer

Working Condition:
When empty bottle 2 reaches the filler, it stops there until the bottle 2 get fully filled and after that it move towards the topper.
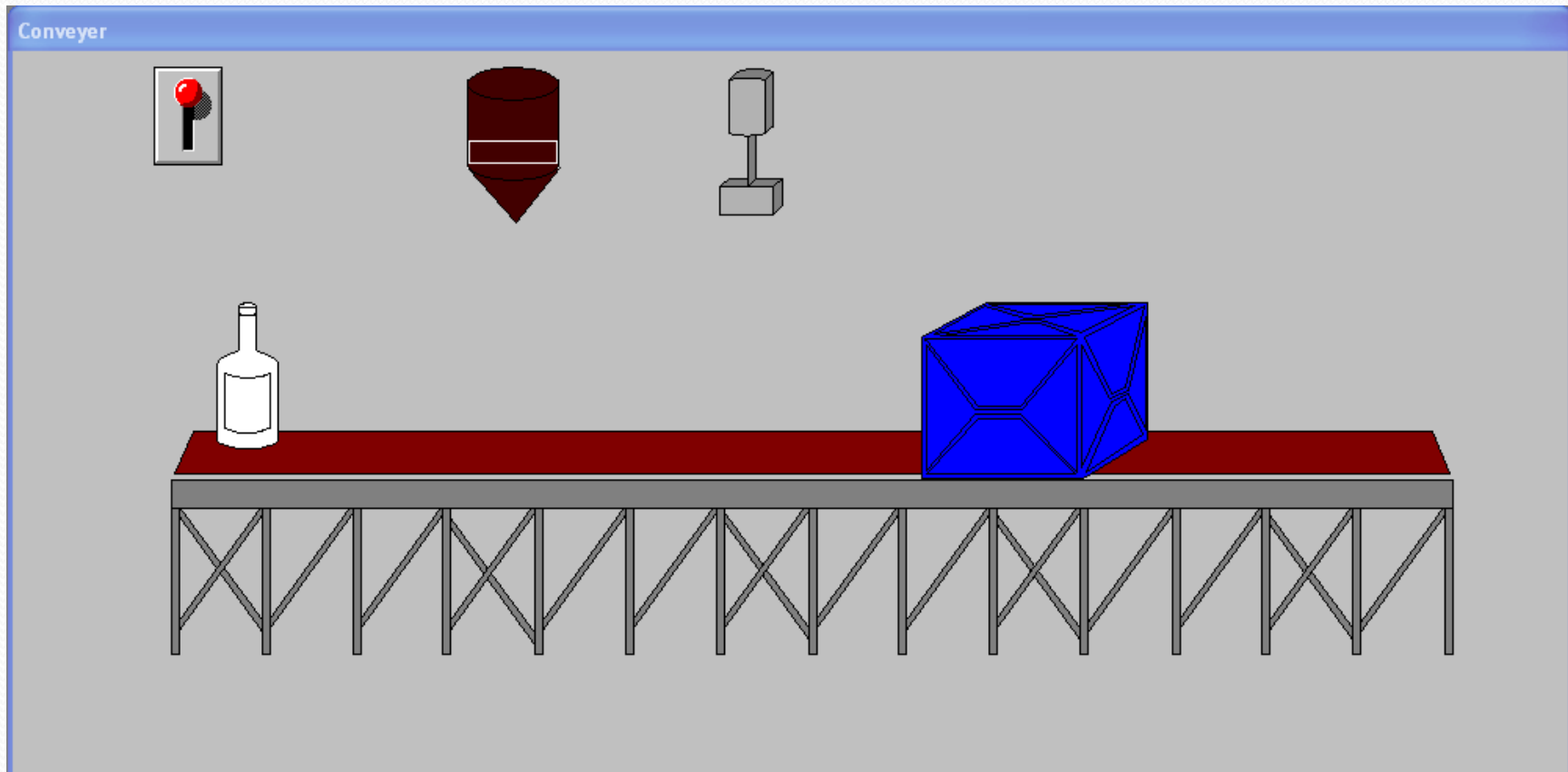
InTouch Window Viewer

Working Condition:

When fully filled bottle 2 reaches the topper, it stops there until the bottle 2 capped with the top and after that it move towards the packing box.
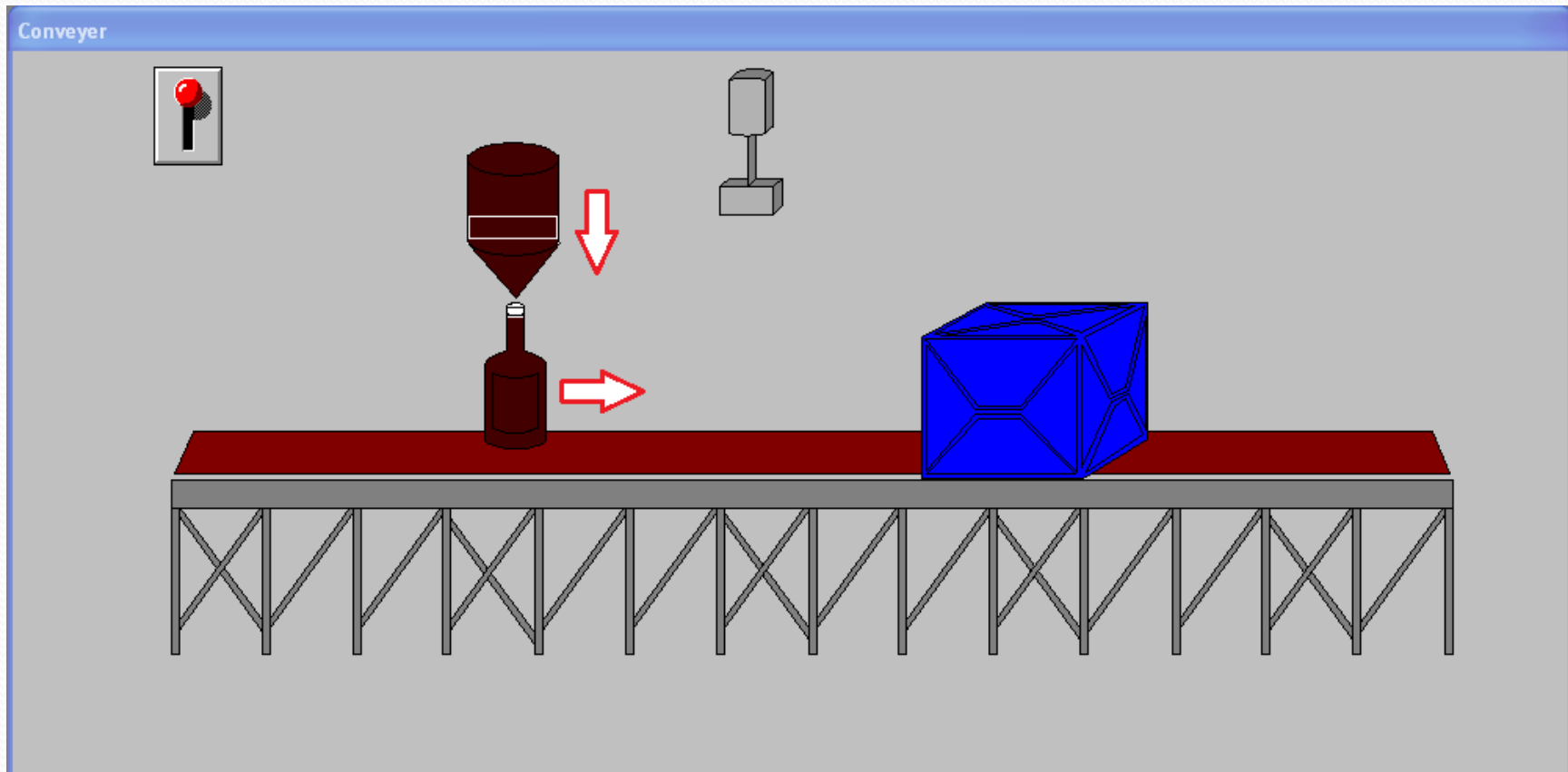
InTouch Window Viewer

Working Condition:
When bottle 2 is packed, bottle 3 is placed over the conveyor belt and it move towards the filler.
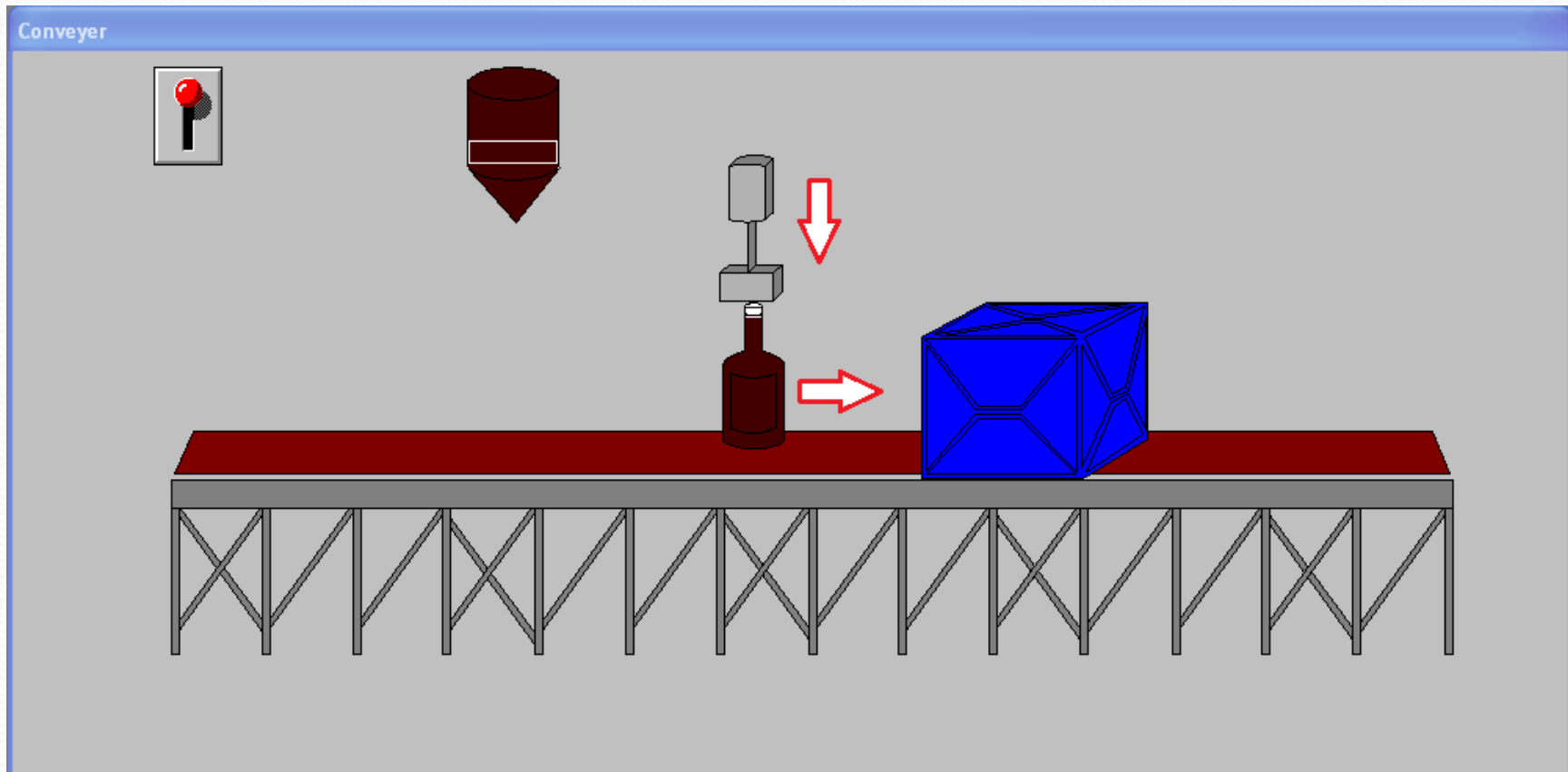
InTouch Window Viewer

Working Condition:

When empty bottle 3 reaches the filler, it stops there until the bottle 3 get fully filled and after that it move towards the topper.
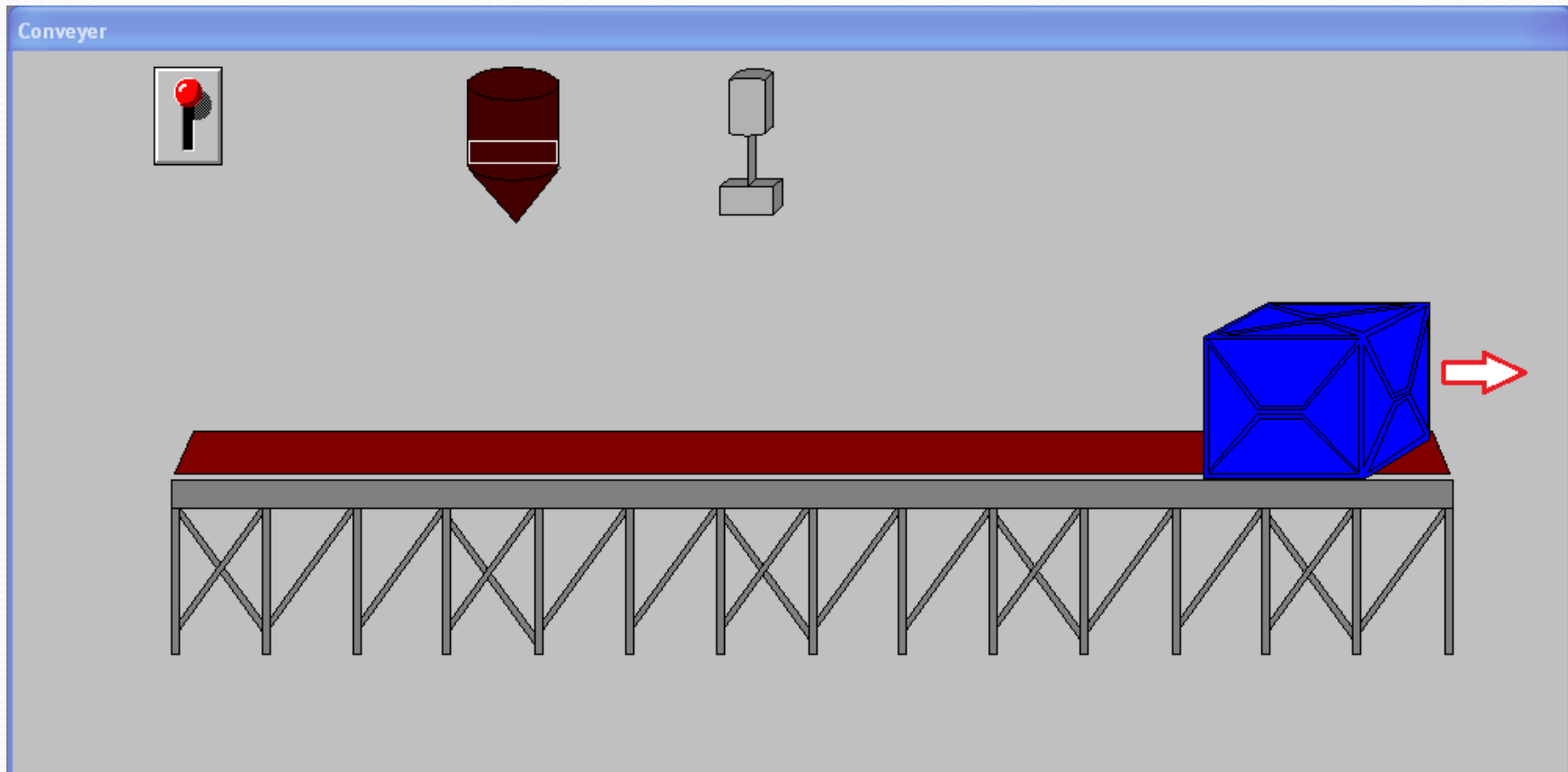
InTouch Window Viewer

Working Condition:
When fully filled bottle 3 reaches the topper, it stops there until the bottle 3 capped with the top and after that it move towards the packing box.

InTouch Window Viewer

Working Condition:
When all the 3 fully filled bottle are packed, the packing box move towards the storage area or delivery area.

CONCLUSION

- Discussed about SCADA, its different layers and its application

- Discussed about Wonderware InTouch

- Done a project on Bottle Filling using Wonderware InTouch