

**General template to build a detailed
sheet for each puzzle and problems
treated by cMinds**

The problem

Title of the problem: **Decorating Easter Eggs**

//Long description of the problem. Be as detailed as possible.

LEVEL 3

David, Vicky, Paula, Jeff decorated their Easter eggs. They decided to add their own special features to some of them. So, Paula painted 1 egg with her freckles, Jeff painted 3 eggs with his buttons, David painted three eggs with his glasses and Vicky painted two eggs with the bow of her hair.

All the eggs have been placed in a big vassel made of glass, where some other eggs where some other eggs, which were not decorated, had also been placed. The vessel has 15 eggs in total.

It is not Easter anymore. All the Eggs should be packed. Use the robot to allocate the decorated and non-decorated eggs to the appropriate boxes. Four boxes are available, on for each child. There is an extra box for eggs that have not been decorated, they have simply been painted by an unknown egg-painter.

LEVEL 2

Vickie decorated her Easter eggs. She decided to add her own special features to some of them. So, Vickie painted 2 eggs with her bows. Her eggs were placed in a big vessel where some other eggs, which were not decorated, had also been placed. The vessel has 8 eggs in total.

It is not Easter anymore. All the Eggs should be packed. Use the robot to allocate Vickie's decorated eggs and the non-decorated eggs to the appropriate boxes. Two boxes are available. One for Vickie's eggs and another one for eggs that have not been decorated, they are simply painted by an unknown- egg painter.

LEVEL 1

Jeff decorated his Easter eggs. He decided to add his own special features to his eggs. In total he decorated 3 eggs and painted his buttons on them. His eggs were placed in a big vessel for Easter period.

It is not Easter anymore. All the Eggs should be packed. Use the robot to allocate Jeff's decorated eggs into his box.

Data

//All the numerical parameters of the problem.

LEVEL 3

Total number of eggs: 15

Paula's eggs : 1

Jeff's eggs : 3

David's eggs: 3

Vicky's eggs: 2

Unknown painter (non- decorated by the children eggs): 6

Total Boxes available : 6

- 1 box to hold the total number of eggs
- 1 box for Paula
- 1 box for Jeff
- 1 box for David
- 1 box for Vicky
- 1 box for the unknown painter

1 robot

LEVEL 2

Total number of eggs: 8

Vickie's eggs : 2

Unknown painter (non- decorated by the children eggs): 6

Total Boxes available : 3

- 1 box to hold the total number of eggs
- 1 box for Vickie
- 1 box for the unknown painter

1 robot

LEVEL 1

Jeff's eggs : 3

Total Boxes available : 2

- 1 box to hold the total number of eggs
- 1 box for Jeff

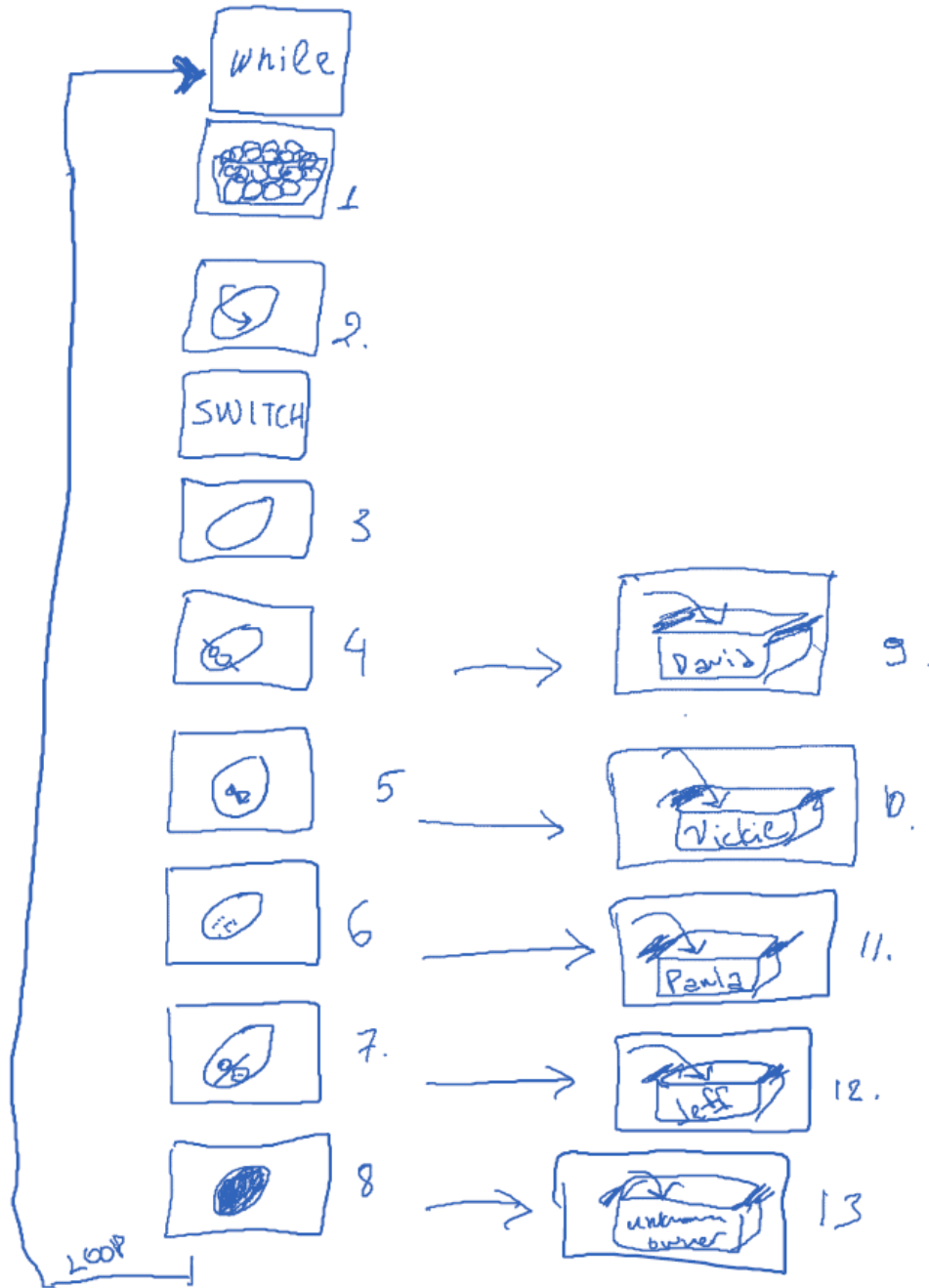
1 robot

Solution

We need to describe here the most ideal solution for the problem, both with a simple algorithm and with a graphical solution

LEVEL 3

1. Graphical



(ignore the numbers indicated in the figure – graphical solution)

2. Algorithmic - Pseudocode

While (Egg exists) {

Grab an egg

Switch (Eggshell){

case1 (glasses): place egg into David's box

case 2 (bows): place egg into Vickie's box

case 3 (freckles): place egg into Paula's box

case 4 (buttons): place egg into Jeff's box

default: place egg into unknown painter's box

}}

--- end of solution---

Notes

glasses mean : glasses are portrayed on the egg (B3)

bows mean : bows are portrayed on the egg (B4)

freckles mean: freckles are portrayed on the egg (B5)

buttons mean: buttons are portrayed on the egg (B6)

LEVEL 2

3. Graphical

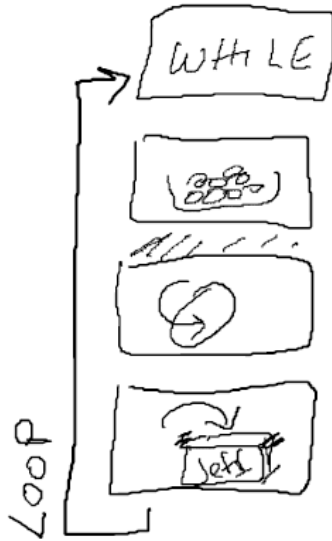


4. Algorithmic

```
While (Egg exists) {  
  Grab an egg  
  IF (bows are portrayed to the egg ) THEN //B4  
  {place egg into Vickie's box}  
  Else  
  { place egg into the unknown painter's box }  
}
```

LEVEL 1

5. Graphical



6. Algorithmic

```
While (Egg exists) {  
  Grab an egg  
  Place egg into Jeff's box  
}
```


List of needed assets (aka talking about the assets)

//Now that we have a solution, we can describe different scenarios (of course not all of them) requiring different assets. This will give us all the assets we need. We need to keep it as simple as possible. It is a list of all the assets used in the result zone and all their possible variations.

For example, if we have a result box for eggs with dots, we need to have it in different states:

- empty
- one egg
- two eggs
- full

Important: all the assets described here **MIGHT NOT** be new. For example, we already have assets for the robot walking or picking stuff. But they still need to be described here. The brand new assets will be singled out in the list below. Also, the assets are just described not pictured here. Again, only the new assets will be pictured below. We could use the same numbering system as below for the assets to keep some level of coherence. In order to have a list as clear as possible, we divide the assets into four categories: action, tests, code, result zone//

A. Action

- A1.** grab an egg from the vessel/ basket
- A2.** An egg is placed into David's box
- A3.** An egg is placed into Vickie's box
- A4.** An egg is placed into Paula's box
- A5.** An egg is placed into Jeff's box
- A6.** An egg is placed into the Unknown painter's Box

B. Tests

- B1.** Egg exists in the vessel/basket **or** the vessel/basket is not empty
- B2.** Check the Eggshell
- B3.** Glasses are portrayed to the egg
- B4.** Bows are portrayed to the egg
- B5.** Freckles are portrayed to the egg
- B6.** Buttons are portrayed to the egg
- B7.** A non- decorated Egg

C. Code

- C1.** WHILE
- C2.** SWITCH

D. Result zone general purpose assets

<p>D1. Jeff's box has 3 eggs D2. Jeff's box has 2 eggs D3. Jeff's box has 1 egg D4. Jeff box is empty</p>	<p>D5. David's box has 3 eggs D6. David's box has 2 eggs D7. David's box has 1 egg D8. David's box is empty</p>	<p>D9. Paula's box has 1 egg D10. Paula's box is empty</p>
<p>D11. Vickie's box has 2 eggs D12. Vickie's box has 1 eggs D13. Vickie's box is empty</p>	<p>D14. Unknown painter's box has 6 eggs D15. Unknown painter's box has 5 eggs D16. Unknown painter's box has 4 eggs D17. Unknown painter's box has 3 eggs D18. Unknown painter's box has 2 eggs D19. Unknown painter's box has 1 eggs D20. Unknown painter's box is empty</p>	<p>D21. Initial vessel/ basket has 15 eggs D22. Initial vessel/ basket has 14 eggs D23. Initial vessel/ basket has 13 eggs D24. Initial vessel/ basket has 12 eggs D25. Initial vessel/ basket has 11 eggs D26. Initial vessel/ basket has 10 eggs D27. Initial vessel/ basket has 9 eggs D28. Initial vessel/ basket has 8 eggs D29. Initial vessel/ basket has 7 eggs D30. Initial vessel/ basket has 6 eggs D31. Initial vessel/ basket has 5 eggs D32. Initial vessel/ basket has 4 eggs D33. Initial vessel/ basket has 3 eggs D34. Initial vessel/ basket has 2 eggs D35. Initial vessel/ basket has 1 eggs D36. Initial vessel/ basket is empty</p>







- D37. Robot is still
- D38. Robot is walking
- D39. Robot is picking an egg
- D40. Robot is holding an egg
- D41. Robot is putting an egg in Jeff's box
- D42. Robot is placing an egg in David's box
- D43. Robot is placing an egg in Paula's box
- D44. Robot is placing an egg in Vickie's box

Visualization (aka drawing the assets)

Nothing more than a drawing of an asset and a number which will be used throughout this document.

1. Action

//All the assets which will be available in the action toolbox.

	A1		A4
	A2		A5
	A3		A6








2. Test

All the assets which will be available in the tests toolbox.

Warning: as we are using switch, we actually need to sets of tests : one very general which is used when we pick what the switch is about, one detailed which describes all the possible test in one of the selected test category.






Example: we have one "EGG" test category and several corresponding sub-category such as:




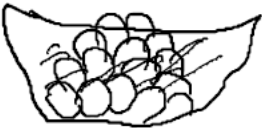











- egg with stripes
- egg with dots
- etc..









TESTS			CORRESPONDING SUB-CATEGORIES OF TESTS		
		B1			B3
		B2			B4
					B5
					B6
					B7

3. General purpose

//Here we have all the new assets which will be used in the result zone.

	D1		D14
	D2		D15
	D3	⋮	D16-D19 #4 assets

	D4		D20
	D5		D21
	D6		D22
	D7	⋮	D23-D34 #12 assets
	D8		D35
	D9		D36
	D10		D37
	D11		D38

	D12		D39
	D13		D40
			D41
			D42
			D43
			D44