Playground Games Algorithm

Module Aim Can the pupils work together to work out what games are being played on these flow charts? Can pupils work together to find the bugs in the bugged playground games flow charts?

Program of Study use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Rationale

Flow charts **can** be useful for planning algorithms. **On occasion** they can also be useful for planning **some** programming that has just a few components. Before children can write flow charts with decisions they need to know how to read them. It is not enough to just demonstrate a flow chart on an interactive whiteboard, pupils need to use them actively. I don't think there are many better ways to fully involve children than combining games playing and problem solving.

Reading the Flowcharts

Take pupils outside and explain that they will need to work out what games these flow diagrams are playing by trying to follow the instructions in groups. Point out the start shape. Split class into mixed ability groups of 4 or 5 and hand each group two copies of the IT flowchart. Instruct pupils that they

Resources Needed
IT flowchart pdf (2 per group laminated)
Piggy in middle flowchart pdf (2 per group laminated)
Bulldog flowchart pdf (2 per group laminated)
Stuck in the mud flowchart pdf (2 per group laminated)
Hide and seek flowchart pdf (2 per group laminated)
Balls or bean bags (1 per group)
Large space (outdoors is best but hall would do)
Printed copy of bugged flowcharts either 1 between 2 or one each (laminated) Whiteboard pen & board wipes
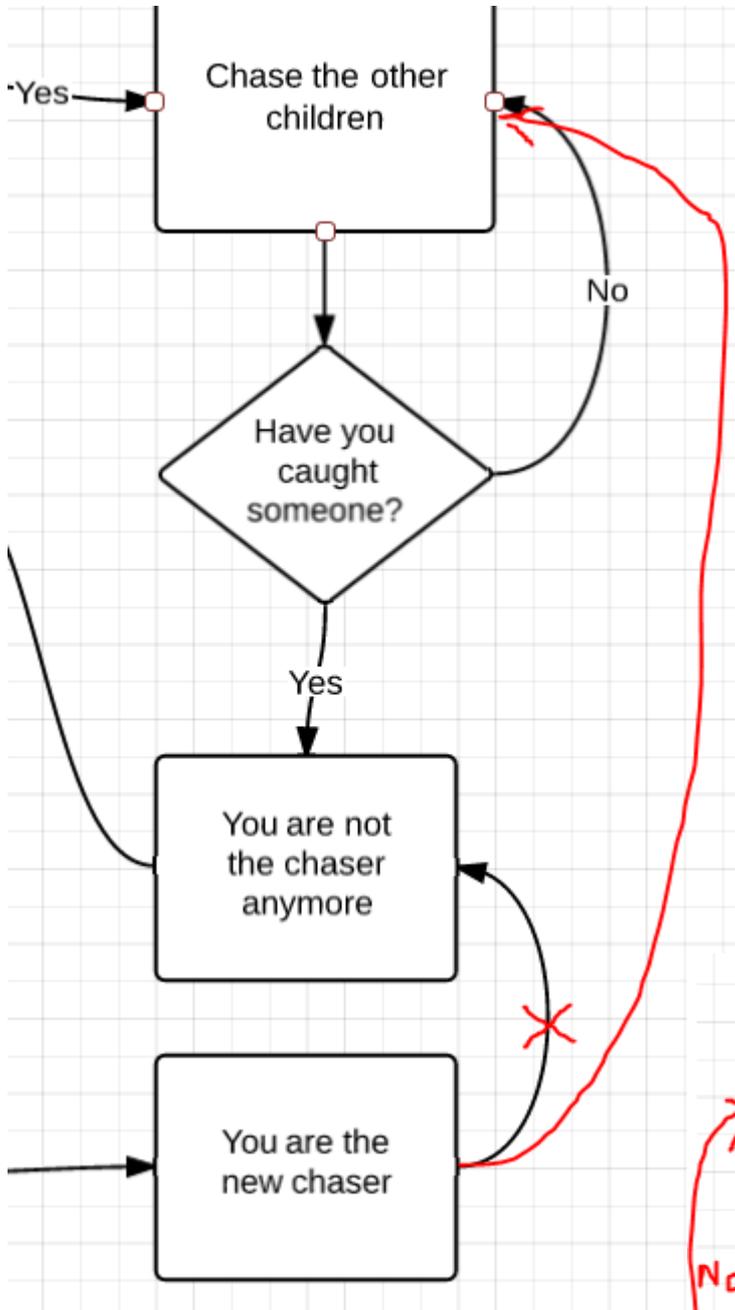Copy of this plan for bugged flowcharts solutions

must not shout out or tell you the answer even if they know. Watch the groups but other than encouraging all group members to be involved don't intervene. Bring the group back and ask what it was. Repeat for other games. Save piggy in middle to last as you will need to split class into groups of three.

Debugging the flowcharts

Move pupils back inside and split them into twos or threes. Now give pupils a copy of the bugged flowcharts explain that there is something wrong with these versions and that they need to try and use them to find out what it is. Pupils can write in the correct lines and come and show you. Check these with the solutions further on.

Playground Games Algorithm P2

Yes → Chase the other children

No

Have you caught someone?

Bugged IT Solution

Yes

You are not the chaser anymore

You are the new chaser

Move around looking for other children

No

Have you found someone?

No

Say found you (insert name)

Bugged Hide and seek Solution

Yes

Playground Games Algorithm P3

No

You are a runner run away from the chaser

Have you caught a runner?

Yes ✗

Yes

Bugged stuck in mud Solution

Are all children standing still with legs apart?

Have you been caught?

you n d by ser?

Bugged Bulldog Solution

Is there only one runner left?

No

Yes ✗

Yes

Are you the last runner?

yes

well done you have won the game and will be the first chaser if you play again

End

Playground Games Algorithm P4

o —— Are you the interceptor? — Yes→ Stand in the middle of the other two people

Try and stop the ball being passed between the other two people

es

Have you intercepted the ball?
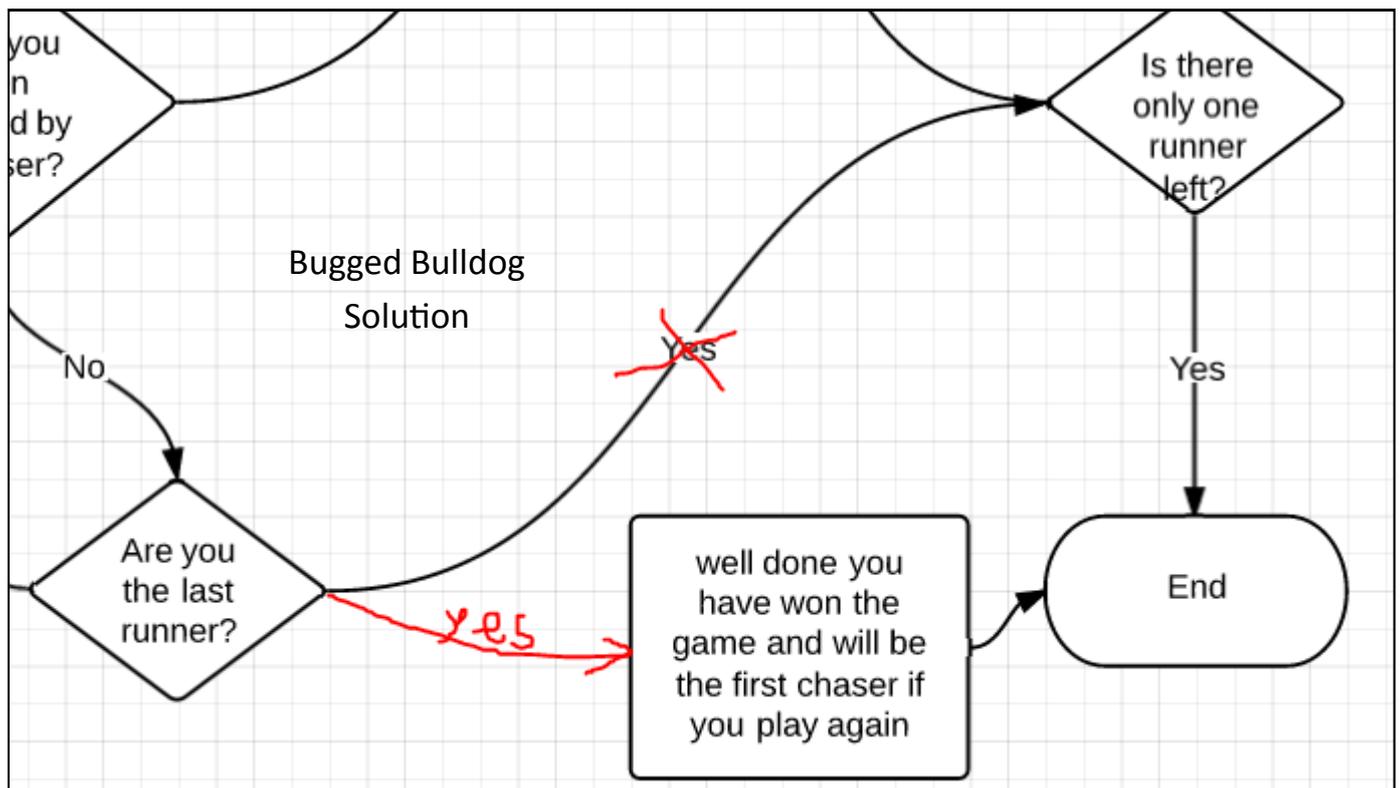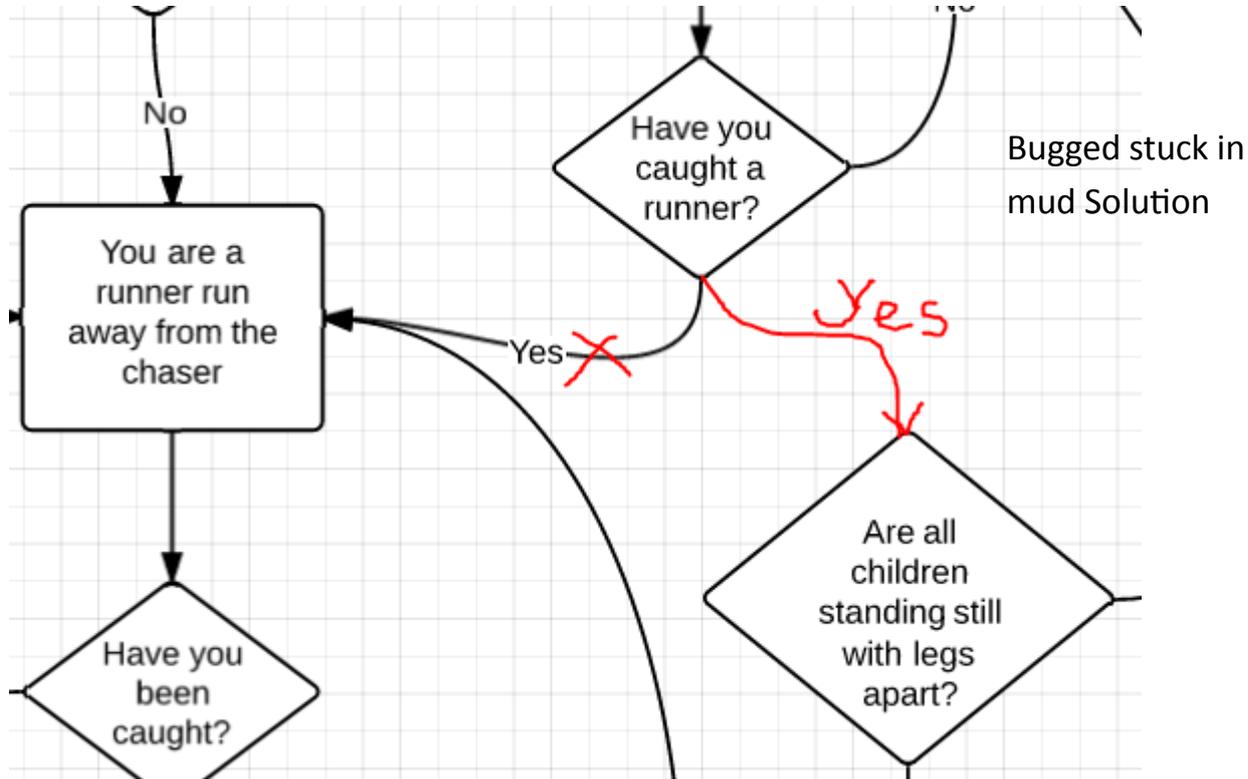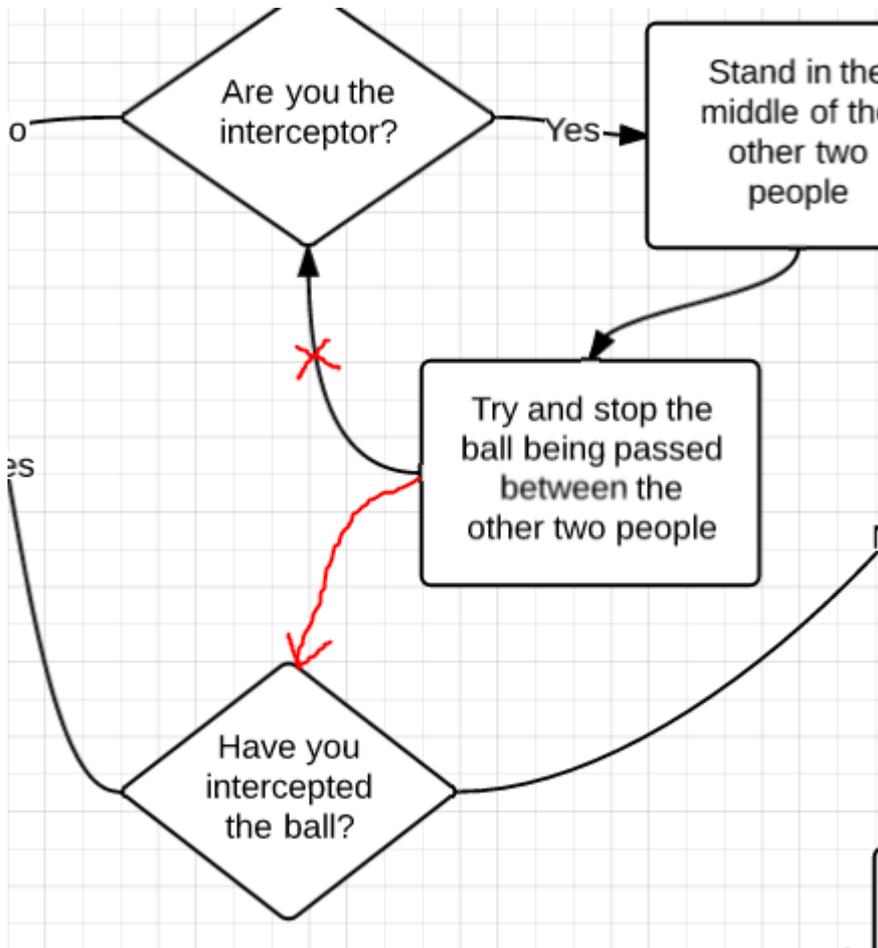
Bugged Piggy in middle Solution