Official 2015 Hour of Code Challenge

Materials List

Challenge Setup

Challenge Description

Summary:

Difficulty:

Tier 1 Rules:

Tier 2 Rules:

Tier 3 Rules:

Bonus Challenge:

Materials List

- Dash and Dot
- Programming device (phone or tablet) with Blockly or Wonder
- 18 disposable 18oz cups
- Painter’s tape
- Measuring device (ruler or tape measure)

Challenge Setup

Watch the video for a visual!

1. Choose an open area next to a wall.
2. The area should be at least 35” x 20” (approximately 51cm x 89cm) with the 35” side parallel to the wall.
3. Use the painter’s tape to create a rectangular space measuring 32” long and 18” wide. The 32” side should be parallel to the wall so that one side of the rectangular space is created by the wall.

4. Arrange 17 disposable cups so they are centered on the painter’s tape and positioned so the lip of each cup is touching the one next to it with no large gaps. Arrange the cups so the front side of the rectangular space has 9 cups parallel to the wall. The sides of the space should be perpendicular to the wall and have 4 cups each.
5. Place 1 cup against the wall at the mid-length of the rectangular space. Place Dot on top of this cup. Arrange Dot to be facing away from the wall.

6. Place Dash to be aligned with the center cup of the longest side of the rectangular space. Arrange Dash to be facing away from the wall.

Challenge Description

Summary:

Dot is trapped behind a barrier of cups, and Dash must come to the rescue! Program Dash to find a “doorway” through the cups and then move close enough to touch the cup that is holding Dot. The doorway can be created by removing two cups next to each other on one side of the rectangular space. (The cups that can be removed are shown in the diagram with a green color.) The exact position of the doorway can change depending on the desired difficulty of the challenge.

Watch the video for a visual!
Difficulty:

The challenge can be attempted in different ways to provide three tiers of difficulty. Players can choose the tier that best suits their abilities, or players can choose to attempt all three tiers for the maximum challenge!

**Tier 1 Rules (measurements and angles):**

1. Create a doorway in the cup barrier by choosing any two adjacent cups on one side of the rectangular space. Removable cups are shown in the diagram with a green color. **ONLY TWO OF THE GREEN CUPS CAN BE REMOVED FOR THE DOORWAY!**
2. For Tier 1, Dash can be hard coded with measured movements and turns.
3. The location of the doorway is known ahead of time, and players are allowed to practice and test their programs as much as they like.
4. Once the program is ready, players must arrange Dash in the position indicated by the diagram.
5. Players cannot interfere with Dash once the program has begun.
6. The challenge will be successfully completed if Dash can touch the cup that is holding Dot without destroying any portion of the cup barrier.
7. The barrier will be considered destroyed and the challenge will be failed if any cup that forms part of the barrier is pushed **completely** off of the painter’s tape that defines the rectangular space.

**Tier 2 Rules (sensors and events):**

Tip: [Blog post about using Dash and Dot’s sensors in Wonder](#)

1. For Tier 2, Dash must use the Distance Sensors to detect the cups and avoid them.
2. Optionally, Dash can also use the Beacon Sensor to detect the position of Dot for more accuracy.
3. Create a doorway in the cup barrier by choosing any two adjacent cups on one side of the rectangular space. Removable cups are shown in the diagram with a green color. **ONLY TWO OF THE GREEN CUPS CAN BE REMOVED FOR THE DOORWAY!**
4. The location of the doorway is known ahead of time, and players are allowed to practice and test their programs as much as they like.
5. Once the program is ready, players must arrange Dash in the position indicated by the diagram.
6. Players cannot interfere with Dash once the program has begun.
7. The challenge will be successfully completed if Dash can touch the cup that is holding Dot without destroying any portion of the cup barrier.
8. The barrier will be considered destroyed and the challenge will be failed if any cup that forms part of the barrier is pushed **completely** off of the painter’s tape that defines the rectangular space.
Tier 3 Rules (generalized algorithms):

Tip: [Blog post about using Dash and Dot’s sensors in Wonder](#)

1. For Tier 3, Dash must use the Distance Sensors and the Beacon sensor to detect the cups and detect the position of Dot.
2. The location of the doorway is NOT known ahead of time. Players must create a program that allows Dash to search for and detect the doorway on either side of the barrier.
3. Once the program is ready, players must arrange Dash in the position indicated by the diagram.
4. Randomly choose the location of the doorway by removing any two adjacent cups on one side of the rectangular space. Removable cups are shown in the diagram with a green color. ONLY TWO OF THE GREEN CUPS CAN BE REMOVED FOR THE DOORWAY! For more fun, have a friend choose the position for you!
5. Players cannot interfere with Dash once the program has begun.
6. The challenge will be successfully completed if Dash can touch the cup that is holding Dot without destroying any portion of the cup barrier.
7. The barrier will be considered destroyed and the challenge will be failed if any cup that forms part of the barrier is pushed completely off of the painter’s tape that defines the rectangular space.

Bonus Challenge:

1. Play with friends!
2. Choose a difficulty tier and each player takes turns creating their own program solution.
3. Run each player’s program and use a clock to measure how long it takes Dash to complete the mission.
4. The player with the shortest time wins!

Have fun!

Post your solutions with #WonderLeague and #HourofCode