Nine 10-year-old boys were asked to rank their favorite T.V. shows. Three kids liked *The Happy Bunny Mayhem Hour* best, with *Dragonball Z* second, followed by *Ed, Edd, and Eddie*, and then *Rabid Ninjas* last. One child ranked had *The Happy Bunny Mayhem Hour* first, followed by *Rabid Ninjas, Dragonball Z, Ed, Edd, and Eddie*, and then *The Happy Bunny Mayhem Hour*. Three other kids ordered the shows as *Rabid Ninjas, Dragonball Z, Ed, Edd, and Eddie*, and then *The Happy Bunny Mayhem Hour*. The two remaining children ranked the shows *Dragonball Z, The Happy Bunny Mayhem Hour, Ed, Edd, and Eddie*, and finally *Rabid Ninjas*.

The results are summarized in the table below:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The Happy Bunny Mayhem Hour</em></td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><em>Dragonball Z</em></td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><em>Ed, Edd, and Eddie</em></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Rabid Ninjas</em></td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

1. Which show would win in a plurality election? (circle your answer)

   *The Happy Bunny Mayhem Hour*    *Dragonball Z*    *Ed, Edd, and Eddie*    *Rabid Ninjas*

**Solution:** The *Happy Bunny Mayhem Hour* is the plurality winner, since it is the choice of 4 voters. The second place winner is *Rabid Ninjas*, prefered by 3 boys, and *Dragonball Z* comes in third with the remaining 2 voters. No one took *Ed, Edd, and Eddie* as their first choice.

2. Which show has the highest Borda count?

   *The Happy Bunny Mayhem Hour*    *Dragonball Z*    *Ed, Edd, and Eddie*    *Rabid Ninjas*

**Solution:** Below are the calculations. Remember that we give 4 points for a first-place vote, 3 points for a second-place, 2 for a third, and 1 for a last-place showing.

   - **Happy Bunny Mayhem Hour:**
     
     $$(3 + 1) \cdot 4 + 2 \cdot 3 + 0 \cdot 2 + 3 \cdot 1 = 25$$

   - **Dragonball Z:**
     
     $$2 \cdot 4 + (3 + 3) \cdot 3 + 0 \cdot 2 + 1 \cdot 1 = 27$$

   - **Ed, Edd, and Eddie:**
     
     $$0 \cdot 4 + 0 \cdot 3 + (3 + 3 + 3 + 3) \cdot 2 + 0 \cdot 1 = 18$$

   - **Rabid Ninjas:**
     
     $$3 \cdot 4 + 1 \cdot 3 + 0 \cdot 2 + (3 + 2) \cdot 1 = 20$$

   So **Dragonball Z** has the highest Borda count, with 27.

3. Which show, if any, is the Condorcet winner?

   *The Happy Bunny Mayhem Hour*    *Dragonball Z*    *Ed, Edd, and Eddie*    *Rabid Ninjas*

**Solution:** My first guess is that it would either be the bunnies (the plurality winner) or Dragonball. Let's see who wins in the head-to-head with those two:

   *The Happy Bunny Mayhem Hour* gets only four votes (from the first two columns). The remaining five voters prefer *Dragonball Z*. So clearly the happy bunnies can't be our Condorcet winner. Perhaps it is DBZ.
Now lets consider DBZ against the Eds: Here, all except one voter prefer Dragonball Z—this voter is the one who ranked Dragonball Z in 4th place. So again, DBZ wins.

Finally, we should compare DBZ to the Rabid Ninjas, and again it wins, this time with another close 5 to 4 race (the outer two columns prefer DBZ, the inner two like the ninjas.)

Since it beat all the other candidates in a one-on-one race, Dragonball Z is the Condorcet winner.

There is no need to check the three other possible contests.