Give a regular expression for strings with an even number of zeros.

There are quite a number of correct answers. The smallest one that I saw was:

\[(01^*0 + 1)^*\]

Any correct solution was accepted. Other popular answers were:

1. \[1^*(01^*01^*)^*\]
2. \[(1^*01^*0)^*1^*\]
3. \[1^*(1^*01^*01^*)^* \text{(Technically the leading 1* in the parenthesis is unnecessary.)}\]

The two most common mistakes were:

1. Not accounting for strings with no zeros. Zero is an even number.
2. The following expression: \[1^*(01^*0)^*1^*\]. Initially this expression seems to work, but there is a large class of input that it does not accept. Consider any string of the form \(...00100...\) This will not be accepted by this expression, because there is no allotment made for the fact that a 1 can separate a pair of zeros.

Give a regular expression for strings with all zeros before any ones

The correct answer to this question is:

\[0^*1^*\]

There were very few people who had any trouble with this question. Some people assumed that you had to have a zero before any ones and provided \[00^*1^*\]. Technically, the question only specified that any zeros had to be before any ones. Also, a correct answer need to take account of the fact that the empty string is a member of this set.