Term 4 Test 1

Thu May 17 2018

Name:

1. In the worse-case scenario, how many yes/no questions will we need in order to guess a number in the following ranges. For each case, build a decision tree to justify your answers
    1. 0-15
    2. 0-1
    3. 0-3
    4. 0-7
    5. 1-16
    6. 1-8
2. For the previous ranges, what is the **information** that we lack in each case before we guess the right answer?
3. What are the decimal values of the following numbers?
    1. 0010 0000
    2. 0001 1111
    3. 0001 1110
    4. 0001 1101
4. For the following values, write their binary representation.
    1. 32
    2. 27
    3. 57
    4. 137
5. What is the value of the **integer logarithm in base 2** of each of the previous numbers?
6. Imagine I spin a compass that can stop only one of the cardinal directions and I hide the result from you. Answer the following questions:
    1. How many possible results can I get?
    2. What is the integer logarithm in base 2 of the number of possible results?
    3. How many yes/no questions do you need in order to guess which result I got?
    4. What is the information you gained once you guessed the result?