Given: 1024 apples
Aim: Find the heaviest and the second heaviest apples.

Step 1:

Constructing a complete binary tree T with 1024 leaves with depth of log(1024).

Step 2:

Putting all the apples into the leaf of T

Step 3:

Looking for the heaviest requires comparison of 1024/2 + 512/2 + 256/2 + 128/2 + 64/2 + 32 /2 + 16/2 + 8/2 + 4/2 + 2/2 = 1023 times

Step 4:

Looking for the second heaviest requires that the second heaviest apple can only lost to the first heaviest apple, then there are 10 comparisons with the heaviest . So we have to compare 9 times within these 10 apples. So that there will be 1023 + 9 = 1032 times

Conclusion:

The algorithm can find out the heaviest 1023 times, the second heaviest is 1032 times