Intro to Dear AI - Fall 2023

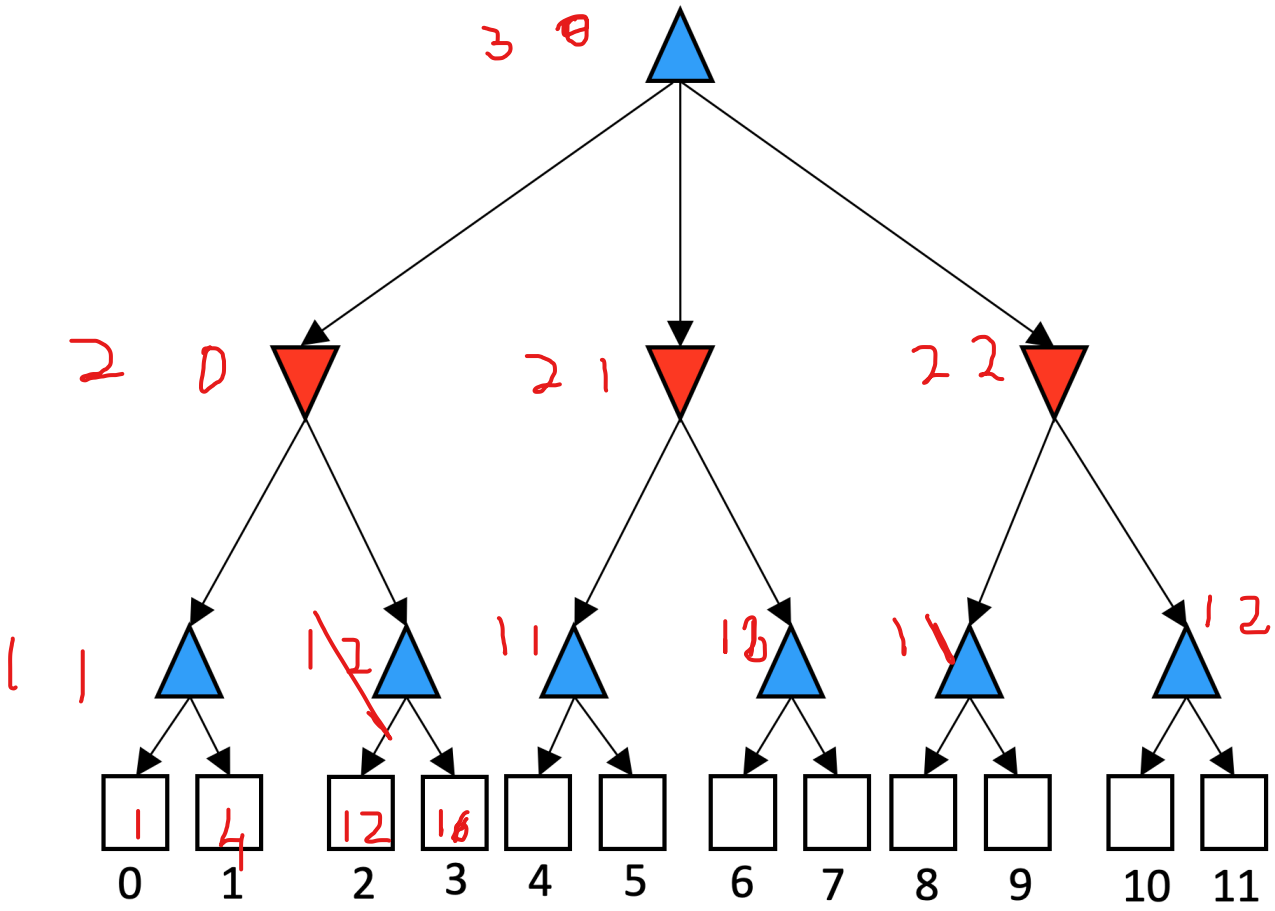
Homework 2

Alpha-beta search

**Due: Friday, Oct 20th, 11:59 pm**

**Description**

In this homework, you will work on the same alpha-beta search problem that we have solved in class. The slide also had a youtube link for you to watch the complete solution for the example search tree. The tree structure is fixed and is shown in the figure below. You need to write a program that receives 12 numbers separated by space from the user. The 12 input numbers will correspond to the 12 terminal nodes of the tree from left to right. Your program should print the index of the terminal states that will be pruned using the alpha-beta search algorithm. The indexes are fixed and are shown in the figure below (0 to 11). As an example case, if the fourth blue triangle from the left should be pruned, your program must print: “6 7” referring to the two terminal nodes below that node.



**Submitting Instructions and Grading**

Follow the same procedure for accessing the homework on Moodle server as described in Homework 1. Look for the "Alpha Beta Search" homework. The grading policy will be also similar (i.e., 10 test cases, and 10 points for each correct answer). The grade you see on Moodle will be a proposed grade. Your submission can be manually checked. Partial credit (**up to 50 points**) will be given to programs that implement the algorithms logically, run, and generate output, but do not pass the test cases.

**Integrity policy**

Please read our course policy again. We will check for similarities between the submissions (including the previous submissions and manually submitted ones by the instructors). To ensure our course remains fair to everyone, we will proactively and carefully check for any suspicious pattern that violates our policy. As we have done this in the past, we will certainly escalate and report any violation to the appropriate contacts at UD. Sharing or using a shared code is prohibited. Our course policy is simple: **your code, in its entirety, MUST be yours**. You can talk to others about the algorithm(s) to be used to solve a homework problem; as long as you then mention their name(s) on the work you submit. Borrowing a few lines of code is fine (say from StackOverflow), but again, you must acknowledge the source.

**Questions?**

Post them on Ed.

**Example input-output pairs**

Example 1

Input:
2 4 13 11 1 3 3 7 3 3 2 2
Output:
3 6 7 10 11

Example 2

Input:
1 4 2 6 8 7 3 7 2 3 2 2
Output:
10 11

Example 3

Input:
15 4 12 16 10 7 3 1 2 3 2 2
Output:
6 7 10 11

Example 4

Input:
1 4 12 16 1 7 3 1 2 8 2 2
Output:
3

Example 5

Input:
1 4 12 16 1 7 3 1 2 8 10 2
Output:
3 11