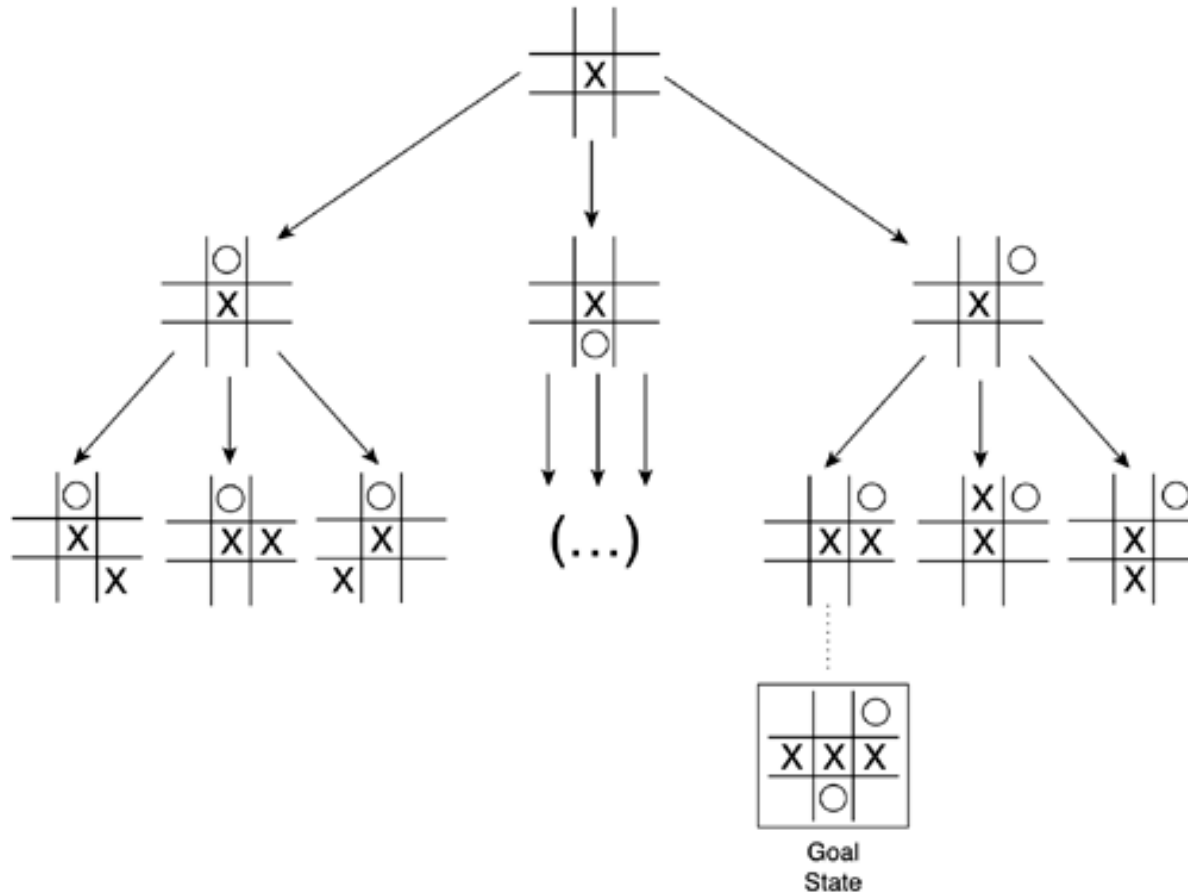


# Practice 11. State Space Tree

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# What is a State Space Tree ?

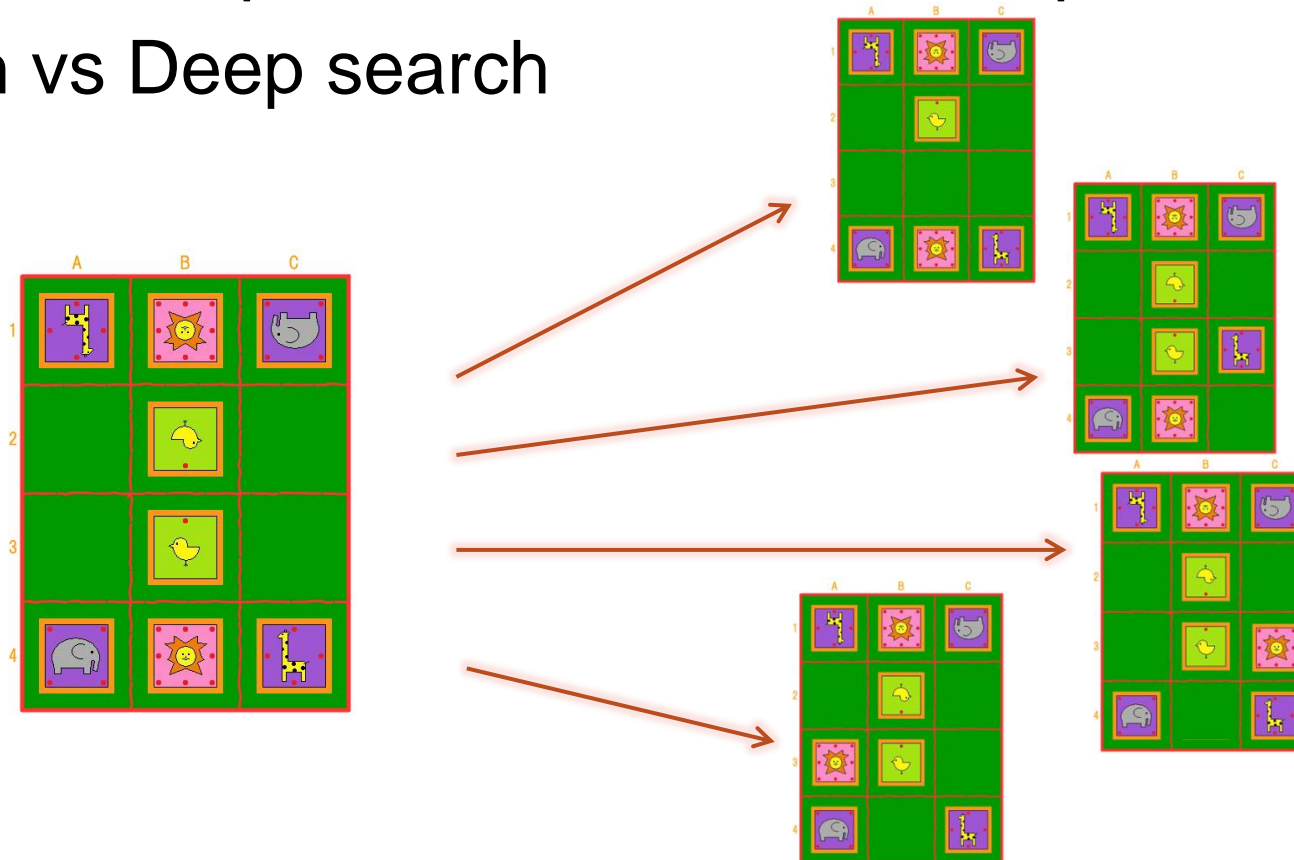
- The state space tree is a tree that represents a search problem mathematically.



# Searching the State Space Tree

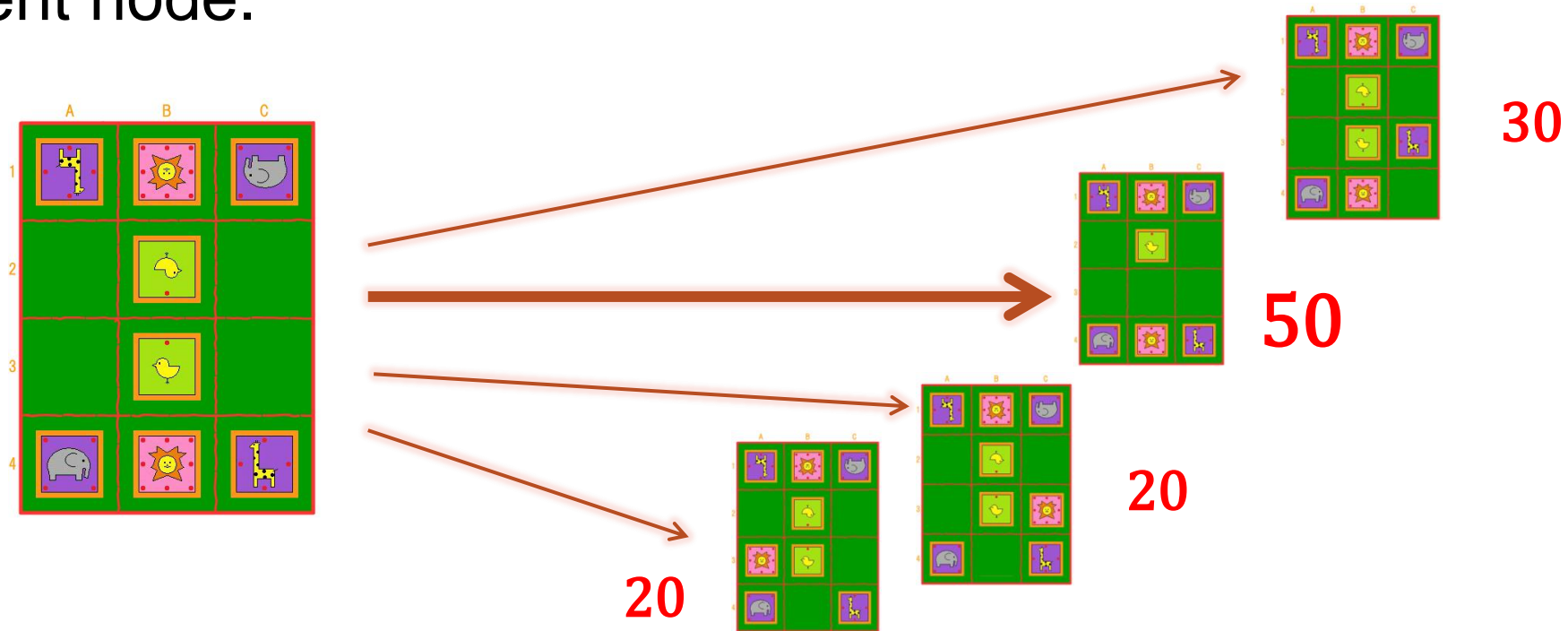
- Starting from the root node (initial state), we want to find the most promising path to achieve a goal.
- Searching the whole space in the tree takes exponential time.
- Shallow search vs Deep search

What should I do next??



# Searching the State Space Tree

- Instead of searching the tree until any winning path is discovered, selecting the next path based on the scores of the nodes that have ever been found so far is more desirable.
- We are going to try this kind of strategy only on the child nodes from the current node.



# How to score boards

- It's up to you to decide what scoring method to be used.
- For those who want to make very efficient algorithms, consider the minimax algorithm.
- Good Luck 😊

# Global Variables Shared on Multiple Files

- We may want to use some global variables shared on multiple source files.
- Firstly, declare it normally on a c file, then access that variable on other c files by declaring it as an extern variable.

[apple.c]

```
int x = 10;
```

```
void g( )
```

```
{
```

```
...
```

[banana.c]

```
extern int x;
```

```
void h( )
```

```
{
```

```
    printf("%d", x);
```

```
...
```

# Assignment Submission

- Create a directory named **assignment** in your home directory.
- Create a directory named **11** in your **assignment** directory.
- Put your source files and a single **makefile**.
- An execution file named **run** should be created when **make** is done.
- Due to : **5/22(Fri) 23:59 pm**

# Assignment [10 points]

- Inputs come from the project.
- Output all possible next state where each state is represented as same as the input format (6 lines!).
- Use a makefile.

**[Input]**

ool

Heo

oGo

oLo

GE

c



[Output]

ool  
oHo  
oGo  
oLo  
GEE  
c  
oHl  
oeo  
oGo  
oLo  
GE  
c  
Hol  
oeo  
oGo  
oLo  
GE  
c  
ool  
oeo  
HGo  
oLo  
GE  
c

ool  
Heo  
ooG  
oLo  
GE  
c  
ool  
Heo  
Goo  
oLo  
GE  
c  
ool  
HGo  
ooo  
oLo  
GEE  
c  
ool  
Heo  
oGo  
ool  
GE  
c

ool  
Heo  
oGo  
Loo  
GE  
c  
Gol  
Heo  
oGo  
oLo  
E  
c  
oGl  
Heo  
oGo  
oLo  
E  
c  
ool  
HeG  
oGo  
oLo  
E  
c

ool  
Heo  
GGo  
oLo  
E  
c  
ool  
Heo  
oGG  
oLo  
E  
c  
ool  
Heo  
oGo  
GLo  
E  
c  
ool  
Heo  
oGo  
oLG  
E  
c

Eol  
Heo  
oGo  
oLo  
G  
c  
oEl  
Heo  
oGo  
oLo  
G  
c  
ool  
HeE  
oGo  
oLo  
G  
c  
ool  
Heo  
EGo  
oLo  
G  
c

ool  
Heo  
oGE  
oLo  
G  
c  
ool  
Heo  
oGo  
ELo  
G  
c  
ool  
Heo  
oGo  
oLE  
G  
c