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Lab 7 : Min Max Algorithm

Question:

The game **Undercut** consists of a sequence of moves in which two players simultaneously choose an integer between one and five, both inclusive. Each person gets the number she chooses as her score for that round, except when the opponent has chosen a number smaller than hers by one, in which case the opponent gets both the numbers. For example, If A chooses 5 and B chooses 3 then A gets 5 and B gets 3. But if A chooses 5 and B chooses 4, then A gets nothing and B gets 9. Devise a strategy to play.   The winner of the game is who scored 100 points first. Implement the game in any programming language with the random function to choose numbers.

Code:

```cpp
#include "iostream"
#include "time.h"
using namespace std;

int main(){
  int a,b,mov,score,cura,curb;
  a = b = mov = cura = curb = 0;
  srand(time(0));

  while(a < 100 && b < 100){
    cura = (rand() % 5) + 1;
    curb = (rand() % 5) + 1;

    if(curb - cura == 1)
      a += cura + curb;
    else if(cura - curb == 1)
```

```cpp
            b += cura + curb;
        else{
            a += cura;
            b += curb;
        }

        cout<<"A's Choice :"<<cura<<" B's Choice :"<<curb<<"\n";
        cout<<"Current Score\n";
        cout<<"A: "<<a<<" B :"<<b<<"\n";
    }
    if(a >= 100)
        cout<<"A won the game with "<<a<<" points\n";
    else
        cout<<"B won the game with "<<b<<" points\n";
}
```

Output

```
A's Choice :1 B's Choice :5
Current Score
A: 1 B :5
A's Choice :3 B's Choice :2
Current Score
A: 1 B :10
A's Choice :2 B's Choice :4
Current Score
A: 3 B :14
A's Choice :1 B's Choice :3
Current Score
A: 4 B :17
A's Choice :2 B's Choice :5
Current Score
A: 6 B :22
A's Choice :1 B's Choice :1
Current Score
A: 7 B :23
A's Choice :4 B's Choice :1
Current Score
A: 11 B :24
A's Choice :4 B's Choice :5
Current Score
A: 20 B :24
A's Choice :1 B's Choice :3
Current Score
A: 21 B :27
A's Choice :5 B's Choice :3
Current Score
A: 26 B :30
```

```
A's Choice :3 B's Choice :2
Current Score
A: 26 B :35
A's Choice :5 B's Choice :2
Current Score
A: 31 B :37
A's Choice :5 B's Choice :2
Current Score
A: 36 B :39
A's Choice :4 B's Choice :1
Current Score
A: 40 B :40
A's Choice :1 B's Choice :2
Current Score
A: 43 B :40
A's Choice :1 B's Choice :2
Current Score
A: 46 B :40
A's Choice :2 B's Choice :4
Current Score
A: 48 B :44
A's Choice :3 B's Choice :1
Current Score
A: 51 B :45
A's Choice :2 B's Choice :1
Current Score
A: 51 B :48
A's Choice :4 B's Choice :2
Current Score
A: 55 B :50
```

```
A's Choice :3 B's Choice :2
Current Score
A: 55 B :55
A's Choice :5 B's Choice :3
Current Score
A: 60 B :58
A's Choice :4 B's Choice :2
Current Score
A: 64 B :60
A's Choice :1 B's Choice :5
Current Score
A: 65 B :65
A's Choice :1 B's Choice :1
Current Score
A: 66 B :66
A's Choice :3 B's Choice :1
Current Score
A: 69 B :67
A's Choice :3 B's Choice :5
Current Score
A: 72 B :72
A's Choice :2 B's Choice :3
Current Score
A: 77 B :72
A's Choice :4 B's Choice :2
Current Score
A: 81 B :74
A's Choice :5 B's Choice :4
Current Score
A: 81 B :83
A's Choice :3 B's Choice :1
Current Score
A: 84 B :84
```

```
A's Choice :5 B's Choice :5
Current Score
A: 89 B :89
A's Choice :5 B's Choice :5
Current Score
A: 94 B :94
A's Choice :2 B's Choice :1
Current Score
A: 94 B :97
A's Choice :4 B's Choice :3
Current Score
A: 94 B :104
B won the game with 104 points
```