

Ted the Lion Heart

New Mexico Adventures in SuperComputing Challenge

Final Report

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Team 073

Shiprock High School

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Executive Summary

We finally awoke from our concussions. We can barely remember the tournament, named Tekken, in which we fought. During our fights, we noticed that one man, named DaMann, controlled his fighters. His fighters punched and kicked us senseless. After our beating, we decided to become like that man who had the ability to control his fighters.

We studied his technique and found out that he programmed each fighter. He first started with an idea of how his fighter would operate. Next, he drew out a plan, known as an algorithm. Then he wrote his plan in code and tested his fighter. Next, he went back and reviewed his code in order to fix the bugs within the code. He repeated this several times until his fighter operated correctly.

We followed his example to create two fighters of our own. Each fighter would operate according to the child's game of "Rock, Paper, and Scissors". This was our mission...

Introduction

In the beginning...in the Adventures of SuperComputing there were four guys who knew little or nothing about computer science. And now this team of guys made a simple game, after many hours of reading and learning material that will help them. The team used C++ programming to write a code that is programmed from a simple rock, paper, scissors game. Now the team will work together to make a game...

The title of our undertaking "Ted the Lion Heart" is the name of our game. "Ted the Lion Heart" is derived from the letters in our name, except one team member who later joined. Video games: they have been around for a time now and will always be around. Since the beginning, people of various ages have been fascinated by the capabilities of technology used to entertain. Now it may be used to get a mother closer to her young ones, a sort of family fun. Others may look at it as a challenge; maybe they are not being challenged enough. Video games are fascinating because of the cool graphics, the ability to design your own characters and stages (i.e. Tony Hawk, Simms), and they keep friends and guests happy and busy. In video games you can do things you can't do in reality, like tricks and out-of-this-world moves. In some games you can choose characters, characters that you are mesmerized by and mesmerized by their abilities.

Project Description

We set out on our mission, a mission we knew little about. We knew we had to beat DaMann, and a C++ program would be the only program that would stand a chance against his programs. We would make two of them so that our real fighter would have a sparring partner, and they would both be controlled by us, their programmers.

Our fighter is known as “Ted the Lion Heart” and his sparring partner is “Emcee ++”. Both fighters would run according to a “Rock, Paper and Scissors” format in which they have only three attacking options. We will control them from a distance known as “filea.dat” and “fileb.dat”. Ted the Lion Heart and Emcee++’s actions will be governed by the input from these manipulator files. They will run through ten fight sequences and the number of fight sequences that he has won will determine the winner.

After the fights are over, the outcome of the battles will be displayed on an output screen so that we remain safe from DaMann and only our fighters are harmed in this process. We truly believe we will be able to defeat DaMann.

Here’s how our fighters win:

They have only three fighting options: Head Butt, Kick, and Punch

H = Head Butt K = Kick P = Punch

H beats K, loses to P and ties with H.

K beats P, loses to H and ties with K.

P beats H, loses to K and ties with P.

If possible we will also endow them with the Cheap Shot ability and a Life counter so that they may become better martial artists.

Hypothesis:

DaMann's fighters will fall to Ted the Lion Heart and, if not, Ted the Lion Heart's sparring partner Emcee ++ will challenge DaMann. He will be the successor for the destruction of DaMann's fighters. Yeessss! Either way we will be satisfied with our results.

Model:

Using "Rock, Paper and Scissors" as a backbone, here's how our fighting should work:

P = Punch

K = Kick

H = Head Butt

C = Cheap Shot

L = Health

$L - (XP + YK + ZH + C) = \text{Life Left}$

Results

After numerous debugging, our team had fixed up our code as best as we could and were able to get the program running. Our extensive research had paid off. We were able to get two human-controlled characters to play. Here are two samples of our program output data and the inputs of the two players. The first output is a test run to ensure our program worked correctly and from that point forward, our output remained constant.

mode:~> fight.x
 Emcee ++ has won the fight sequence 1.
 Emcee ++ has won the fight sequence 2.
 Emcee ++ has won the fight sequence 3.
 Emcee ++ has won the fight sequence 4.
 Emcee ++ has won the fight sequence 5.
 Emcee ++ has won the fight sequence 6.
 Emcee ++ has won the fight sequence 7.
 Emcee ++ has won the fight sequence 8.
 Emcee ++ has won the fight sequence 9.
 Emcee ++ has won the fight sequence 10.
 Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 10 fight sequences.
 Emcee ++ beat up Ted the Lion Heart.
 Emcee ++ is the new world champion!!!

Ted the Lion Heart	Emcee ++
H	H
H	P
H	K
P	H
P	P
P	K
K	H
K	P
K	K
K	P
<i>Output data to the left.</i>	

*mode:~> fight.x
 Emcee ++ has won the fight sequence 1.
 Emcee ++ has won the fight sequence 2.
 Emcee ++ has won the fight sequence 3.
 Emcee ++ has won the fight sequence 4.
 Emcee ++ has won the fight sequence 5.
 Emcee ++ has won the fight sequence 6.
 Emcee ++ has won the fight sequence 7.
 Emcee ++ has won the fight sequence 8.
 Emcee ++ has won the fight sequence 9.
 Emcee ++ has won the fight sequence 10.
 Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 10 fight sequences.
 Emcee ++ beat up Ted the Lion Heart.
 Emcee ++ is the new world champion!!!

Ted the Lion Heart	Emcee ++
H	K
P	P
K	K
K	K
K	P
P	H
P	P
H	K
P	H
P	H
<i>Output data to the left..</i>	

Conclusion

As you can see, our laborious training has paid off a bit. We were able to get a working program, but we couldn't get our fighters to operate correctly. We must train harder to defeat DaMann. We have also decided that if one is to become a fighter maker, they must be proficient in the programming language with which they will create their fighter.

Our journeys have led us across many areas of interest. One of which is the programming aspect of creating Ted the Lion Heart and Emcee ++. We were intrigued by their foolhardy qualities. They followed us to the letter, and it took us a while to get them to fight properly although Ted the Lion Heart, our fighter, was continuously malfunctioning due to minor input errors. Another intriguing aspect of our journey was the fact that we were capable of creating a functioning fighter although our functioning fighter wasn't the warrior to originally fight DaMann. DaMann will continue to reign supreme. Until next time, DaMann...

Recommendation

Here is some advice for those wishing to challenge DaMann. Our fighters didn't complete their journey due to the many missions we had to complete. Stay focused on your goal and make sure you thoroughly understand what you are getting into. If we had more time, we'd have an approximately 40-60 percent chance of getting this right. If we focused better on our mission, we would probably succeed with it. It was probably quite foolish of us to take this mission, not knowing the risk it would involve. By doing this, it will build our confidence and it's only one of our key goals to try to defeat DaMann. Also, be sure to heed the advice of elders and prophets like our prophet, an AiS Consultant. We also recommend that you have an understanding of your surroundings.

Acknowledgements

Many moons have passed. Our mission is almost complete. These young warriors for whom we are grateful determined our success:

Jeremy Harwood

Loren Deel

Farrell Thomas

Shawn Morris

Without our sensei's help we would still have our concussions. For helping us immensely we will always extremely appreciate their guidance.

Vernetta Noble

Brenda Hines

Barbara Hayes

Kyla Johnson

Char IronMoccasin

The prophets at AiS Consult saved us several times from becoming lost in the way of the warrior. They helped us out of our coding dilemmas and we are forever grateful for their kindness.

References

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Appendix A.

```
#include <iostream>
#include <fstream>
using namespace std;

enum PlayType {Headbutt, Punch, Kick};

PlayType ConversionVal( char );

void GetPlays( ifstream&, ifstream&, PlayType&, PlayType&, bool& );
void PrintBigWinner( int, int );
void ProcessPlays( int, PlayType, PlayType, int&, int& );
void RecordAWin( char, int, int& );

int main()
{
    PlayType playForA;
    PlayType playForB;
    int gameNumber = 0;
    int winsForA = 0;
    int winsForB = 0;
    bool legal;
    ifstream fileA;
    ifstream fileB;

    fileA.open("fileA.dat");
    fileB.open("fileB.dat");

    if( !fileA || !fileB )
    {
        cout << "*** Can't open input file(s) ***" << endl;
        return 1;
    }

    GetPlays( fileA, fileB, playForA, playForB, legal );
    while( fileA && fileB )
    {
        gameNumber++;
        if( legal )
            ProcessPlays( gameNumber, playForA, playForB, winsForA,$
        else
        {
```

```

        cout << "Game Number " << gameNumber << " contains an illegal ";
        cout << "play." << endl;
    }
    GetPlays( fileA, fileB, playForA, playForB, legal );
}

PrintBigWinner( winsForA, winsForB );

return 0;
}

void GetPlays( /* inout */ ifstream& fileA, /*inout */ ifstream& fileB,
/* out */ PlayType& playForA, /* out */ PlayType& playForB, /* out */
bool& legal)

{
    char charForA;
    char charForB;

    fileA >> charForA;
    fileB >> charForB;
    if( !fileA || !fileB);
    return;

    legal = ( charForA=='H' || charForA=='P' || charForA=='K' ) &&
( charForB=='H' || charForB=='P' || charForB=='K' );

    if( legal )
    {
        playForA = ConversionVal( charForA );
        playForB = ConversionVal( charForB );
    }
}

PlayType ConversionVal( /* in */ char someChar )

{
    switch( someChar )
    {
        case 'H': return Headbutt;
        case 'P': return Punch;
        case 'K': return Kick;
    }
}

void ProcessPlays( /* in */ int gameNumber, /* in */ PlayType playForA,

```

```

/* in */ PlayType playForB, /* inout */ int& winsForA, /* inout */ int&
winsForB )

{
    if( playForA == playForB )
    {
        cout << "Fight Sequence " << gameNumber << " is a tie.";
        cout << endl;
    }
    else if( playForA == Punch && playForB == Headbutt || playForA ==
Kick && playForB == Punch || playForA == Headbutt && playForB == Kick )
    {
        RecordAWin('A', gameNumber, winsForA);
    }
    else
    {
        RecordAWin('B', gameNumber, winsForB);
    }
}

```

```

void RecordAWin( /* in */ char player, /* in */ int gameNumber, /* inout
*/ int& numOfWins)

```

```

{
    cout << "Fighter " << player << " has won the fight sequence ";
    cout << gameNumber << "." << endl;
    numOfWins++;
}

```

```

void PrintBigWinner( /* in */ int winsForA, /* in */ int winsForB )

```

```

{
    cout << "Ted the Lion Heart has won " << winsForA << " fight sequences.";
    cout << endl;
    cout << "Emcee ++ has won " << winsForB << " fight sequences.";
    cout << endl;

    if( winsForA > winsForB )
    {
        cout << "Ted the Lion Heart beat up Emcee ++." << endl;
        cout << "Ted the Lion Heart is the new world champion!!!" << endl;
    }

    else if( winsForB > winsForA )
    {
        cout << "Emcee ++ beat up Ted the Lion Heart." << endl;
    }
}

```

```
        cout << "Emcee ++ is the new world champion!!!" << endl;
    }
    else
    {
        cout << "You knocked each other out! Johnny Boy wins!";
        cout << endl;
    }
}
```

Appendix B:

*mode::~> fight.x

Emcee ++ has won the fight sequence 1.
 Emcee ++ has won the fight sequence 2.
 Emcee ++ has won the fight sequence 3.
 Emcee ++ has won the fight sequence 4.
 Emcee ++ has won the fight sequence 5.
 Emcee ++ has won the fight sequence 6.
 Emcee ++ has won the fight sequence 7.
 Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 7 fight sequences.
 Emcee ++ beat up Ted the Lion Heart.
 Emcee ++ is the new world champion!!!

Ted the Lion Heart	Emcee ++
H	K
P	P
K	K
K	K
K	P
P	H
P	P
<i>(no plays)</i>	K
<i>(no plays)</i>	H
<i>(no plays)</i>	H
<i>Output data to the left..</i>	

*mode::~> fight.x

Emcee ++ has won the fight sequence 1.
 Emcee ++ has won the fight sequence 2.
 Emcee ++ has won the fight sequence 3.
 Emcee ++ has won the fight sequence 4.
 Emcee ++ has won the fight sequence 5.
 Emcee ++ has won the fight sequence 6.
 Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 6 fight sequences.
 Emcee ++ beat up Ted the Lion Heart.
 Emcee ++ is the new world champion!!!

Ted the Lion Heart	Emcee ++
H	K
P	P
K	K
K	K
K	P
P	H
P	<i>(no plays)</i>
H	<i>(no plays)</i>
P	<i>(no plays)</i>
P	<i>(no plays)</i>
<i>Output data to the left..</i>	

*mode::~> fight.x

Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 0 fight sequences.
 You knocked each other out! Johnny Boy wins!!!

Ted the Lion Heart	Emcee ++
<i>(no plays)</i>	<i>(no plays)</i>

*mode::~> fight.x

Emcee ++ has won the fight sequence 1.
 Ted the Lion Heart has won 0 fight sequences.
 Emcee ++ has won 1 fight sequences.
 Emcee ++ beat up Ted the Lion Heart.
 Emcee ++ is the new world champion!!!

Ted the Lion Heart	Emcee ++
<i>G</i>	<i>H</i>