# Assignment 2

## Team 16

### <u>Test Cases:</u>

#	Test Case	Input	Expected Output
1	User inputs 3 valid integers	(4,5,6)	The program should print: "Value of the rank is 3"
2	User inputs 3 valid integers	(2,3,2)	The program should print: "Value of the rank is 3"
3	User inputs 3 valid integers	(2,1,3)	The program should print: "Value of the rank is 1"
4	User inputs nothing	("")	Error message should be displayed – "Invalid entry"
5	User inputs invalid characters that are not all integers	(2,1)	Error message should be displayed – "Invalid entry"
6	User inputs 3 valid integers that are all the same	(1,1,1)	Since 1 is not greater than 1, the statement: if (atoi(argv[i]) > atoi(argv[r])) r = i; is not satisfied and the program should print: "Value of the rank is 1"
7	User inputs 3 valid integers that are all the same	(2,2,2)	Since 2 is not greater than 2, the statement: if (atoi(argv[i]) > atoi(argv[r])) r = i;

			is not satisfied and the program should print: "Value of the rank is 2"
8	User inputs 3 valid integers that are all the same	(3,3,3)	Since 3 is not greater than 3, the statement: if (atoi(argv[i]) > atoi(argv[r])) r = i; is not satisfied and the program should print: "Value of the rank is 3"
9	User inputs invalid characters that are not all integers	(-1,-,-3)	Error message should be displayed – "Invalid entry"
10	User inputs 3 valid integers	(1,2,2)	Since 2 is greater than 1, the program should print: "Value of the rank is 2"

#### <u>Mutants:</u>

- 1) Change line 6 to: if (atoi(argv[i]) > r) r = i;
- 2) Change line 3 to: r = 0;
- 3) Change line 6 to: if (atoi(argv[i]) > i) r = i;
- 4) Change line 5 to: i = 1 to 4 do

*killable by test case 3 killable non-killable / equivalent* 

killable

5) Change line 6 to: if (atoi(argv[i]) == atoi(argv[r])) r = i; *killable* 

#### Inital Mutation Score:

Ms = <u>4 killed mutants</u> = 80% 5 mutations

Test Case to cover the non killable mutation:

User inputs 3 valid	(1,2,3,f)	Since 3 is greater than
integers and a character		2, the program should
		Value of the rank is 3

This test case should cover the equivalent mutation to make it killable. Because the user inputs more than 3 inputs, where one of the inputs is not an integer that should trigger the mutant.

#### Final Mutation Score:

**Ms** = <u>5 killed mutants</u> = 100% 5 mutations