

# **2021 Winter CIS200 – Programming Assignment 2**

## **List, Operator and Friend**

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## Question 1 Unsorted List (30 points)

### Source code (USED C++ COMPILER on Microsoft Windows 10)

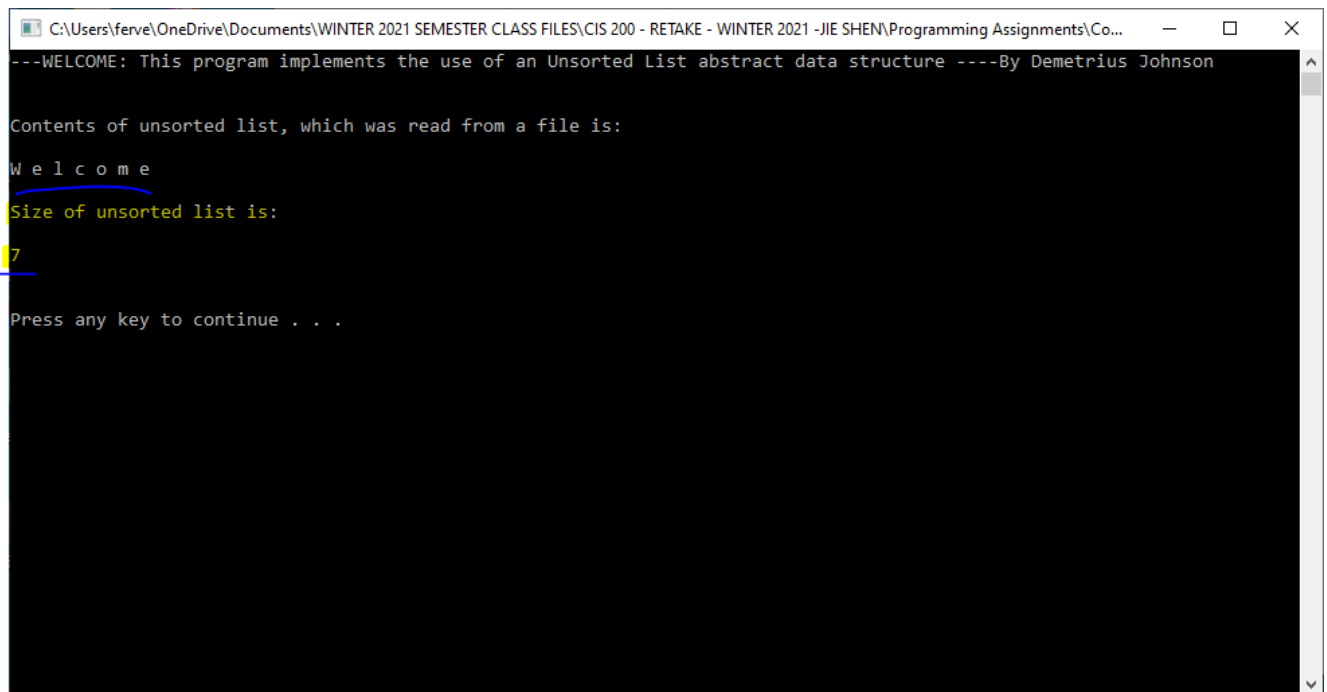
See CPP and H uploads I made in canvas with this document along with the executables.

### Test data and expected results

Test Table:

Test #	Valid / Invalid Data	Description of test	Input Value	Expected Output	Actual Output	Test Pass / Fail
1	valid	Output the results from the char.dat file and the number of elements	Char.dat	See screenshot	See screenshot	pass

TEST 1:



```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAKE - WINTER 2021 - JIE SHEN\Programming Assignments\Co...
---WELCOME: This program implements the use of an Unsorted List abstract data structure ---By Demetrius Johnson

Contents of unsorted list, which was read from a file is:

W e l c o m e
Size of unsorted list is:
7
Press any key to continue . . .
```

## Question 2 Operator (30 points)

### Source code (USED C++ COMPILER on Microsoft Windows 10)

See CPP and H uploads I made in canvas with this document along with the executables

### Test data and expected results

Test Table:

Test #	Valid / Invalid Data	Description of test	Input Value	Expected Output	Actual Output	Test Pass / Fail
1	valid	Test the copy constructor of Complex class	T(y)	See screenshot	See screenshot	pass
2	valid	Test x and y using assignment operator	Assigning x and y	See screenshot	See screenshot	pass
3	valid	Test addition and subtraction operator of Complex class	Assigning z and w	See screenshot	See screenshot	pass
4	valid	Test multiplication and division of Complex class	Assigning v and q	See screenshot	See screenshot	pass
5	valid	Test == comparison operator of Complex class	Comparing w to z	See screenshot	See screenshot	pass
6	valid	Test prefix and postfix operator++	Assigning T to x	See screenshot	See screenshot	pass

## TEST 1:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
---WELCOME to the Complex Numbers Program ---By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \text{sqrt}(-1)$ .

Testing copy constructor and operator<< : Complex T(y) --> T = 4 + 3*i
Test variables:
x = 2 + 2*i
y = 4 + 3*i
z = x + y = 6 + 5*i
w = x - y = -2 - 1*i
v = x * y = 2 + 14*i
q = x / y = 0.56 + 0.08*i

Testing operator== --> is z = w? solution: z != w

Testing prefix operator++ --> T = ++x:
T = 3 + 3*i
x = 3 + 3*i

Testing postfix operator++ --> T = x++:
T = 3 + 3*i
x = 4 + 4*i

~...Program has finished...exiting....
Press any key to continue . . .
```

## TEST 2:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
---WELCOME to the Complex Numbers Program ----By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \sqrt{-1}$ .

Testing copy constructor and operator<< : Complex T(y) -->  $T = 4 + 3*i$ 

Test variables:
x = 2 + 2*i
y = 4 + 3*i
z = x + y = 6 + 5*i
w = x - y = -2 - 1*i
v = x * y = 2 + 14*i
q = x / y = 0.56 + 0.08*i

Testing operator== --> is  $z = w$ ? solution:  $z \neq w$ 

Testing prefix operator++ -->  $T = ++x$ :

T = 3 + 3*i
x = 3 + 3*i

Testing postfix operator++ -->  $T = x++$ :

T = 3 + 3*i
x = 4 + 4*i

~....Program has finished...exiting....
Press any key to continue . . .
```

### TEST 3:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
--WELCOME to the Complex Numbers Program ----By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \sqrt{-1}$ .
Testing copy constructor and operator<< : Complex T(y) --> T = 4 + 3*i

Test variables:
x = 2 + 2*i
y = 4 + 3*i
z = x + y = 6 + 5*i
w = x - y = -2 - 1*i
v = x * y = 2 + 14*i
q = x / y = 0.56 + 0.08*i

Testing operator== --> is z = w? solution: z != w

Testing prefix operator++ --> T = ++x:

T = 3 + 3*i
x = 3 + 3*i

Testing postfix operator++ --> T = x++:

T = 3 + 3*i
x = 4 + 4*i

~...Program has finished...exiting....
Press any key to continue . . .
```

#### TEST 4:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
---WELCOME to the Complex Numbers Program ---By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \sqrt{-1}$ .

Testing copy constructor and operator<< : Complex T(y) --> T = 4 + 3*i

Test variables:
x = 2 + 2*i
y = 4 + 3*i
z = x + y = 6 + 5*i
w = x - y = -2 - 1*i
v = x * y = 2 + 14*i
q = x / y = 0.56 + 0.08*i

Testing operator== --> is z = w? solution: z != w

Testing prefix operator++ --> T = ++x:
T = 3 + 3*i
x = 3 + 3*i

Testing postfix operator++ --> T = x++:
T = 3 + 3*i
x = 4 + 4*i

~....Program has finished...exiting....
Press any key to continue . . .
```



## TEST 5:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
---WELCOME to the Complex Numbers Program ----By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \sqrt{-1}$ .

Testing copy constructor and operator<< : Complex T(y) -->  $T = 4 + 3*i$ 

Test variables:
 $x = 2 + 2*i$ 
 $y = 4 + 3*i$ 
 $z = x + y = 6 + 5*i$ 
 $w = x - y = -2 - 1*i$ 
 $v = x * y = 2 + 14*i$ 
 $q = x / y = 0.56 + 0.08*i$ 

Testing operator== --> is  $z = w$ ? solution:  $z \neq w$ 

Testing prefix operator++ -->  $T = ++x$ :
 $T = 3 + 3*i$ 
 $x = 3 + 3*i$ 

Testing postfix operator++ -->  $T = x++$ :
 $T = 3 + 3*i$ 
 $x = 4 + 4*i$ 

~....Program has finished...exiting....
Press any key to continue . . .
```

## TEST 6:

```
C:\Users\ferve\OneDrive\Documents\WINTER 2021 SEMESTER CLASS FILES\CIS 200 - RETAK...
---WELCOME to the Complex Numbers Program ----By Demetrius Johnson

A complex number is represented in the form  $z = \text{Real} + \text{Imaginary}$  --?  $a + b*i$ :
A is a real number, B is a real number, and  $i = \text{sqrt}(-1)$ .

Testing copy constructor and operator<< : Complex T(y) --> T = 4 + 3*i

Test variables:
x = 2 + 2*i
y = 4 + 3*i
z = x + y = 6 + 5*i
w = x - y = -2 - 1*i
v = x * y = 2 + 14*i
q = x / y = 0.56 + 0.08*i

Testing operator== --> is z = w? solution: z != w

Testing prefix operator++ --> T = ++x:
T = 3 + 3*i
x = 3 + 3*i

Testing postfix operator++ --> T = x++:
T = 3 + 3*i
x = 4 + 4*i

~....Program has finished...exiting....
Press any key to continue . . .
```