MSU CSC 325 Fall 2015
Project 2. Red-Black Tree with issues
Apr. 27, 2016
Due: 11:59pm, TBD

You are provided with a Red-Black Tree implementation that sorts N integers, **Proj2_RBTree.cpp**

The program accepts one command-line parameter: the number of integers to sort.

You will write a two-page document describing your analysis of the provided program.

Task 1. Run the code with varying values of N from 32,000 to 16,000,000 at intervals you determine. Plot the runtimes in Excel and put the plot into a MS Word document.

Task 2. Determine whether the data plot of observed runtimes matches the expected O( ) runtime of a Red-Black tree. Discuss.

Task 3. There are (at least) two inefficiencies in the implementation. The inefficiencies affect the expected O( ) runtime of the Red-Black tree by adding O(1) operations whose constant times are so great that the constants overwhelm the expected O( ) runtime of a Red-Black tree.

Review and analyze the provided code to search for the inefficiencies. Implement different code that removes the inefficiencies.

Save the MS Word document on eccentric as **Proj2.doc**.
Save your revised code on eccentric as **Proj2_RBTree.cpp**

Student name		Character	Index of this char	Name of character		Character	Index of this char	Name of character		Character	Index of this char	Name of character
Not assigned			32	space		@	64	At-sign		`	96	Grave accent
Mills, Cameron		!	33	Exclamation point		A	65	Uppercase A		a	97	Lowercase a
Sheck, Kyle		"	34	Double quote		B	66	Uppercase B		b	98	Lowercase b
Rowell, Andrew		#	35	Number sign		C	67	Uppercase C		c	99	Lowercase c
Snell, David		$	36	Dollar sign		D	68	Uppercase D		d	100	Lowercase d
Bashir, Radeeb		%	37	Percent sign		E	69	Uppercase E		e	101	Lowercase e
Rielly, Aaron		&	38	ampersand ('and' sign)		F	70	Uppercase F		f	102	Lowercase f
Belew, Joshua		'	39	Single quote		G	71	Uppercase G		g	103	Lowercase g
Nishimoto Macedo, America		(	40	Left parenthesis		H	72	Uppercase H		h	104	Lowercase h
Lingo, Thomas		)	41	Right parenthesis		I	73	Uppercase I		i	105	Lowercase i
Webb, Mark		*	42	Asterisk (star)		J	74	Uppercase J		j	106	Lowercase j
Hall, Nathan		+	43	Plus		K	75	Uppercase K		k	107	Lowercase k
Cooper, Kyle		,	44	Comma		L	76	Uppercase L		l	108	Lowercase l
McGurty, Josiah		-	45	Minus (hyphen)		M	77	Uppercase M		m	109	Lowercase m
Jennings, Kyle		.	46	Period		N	78	Uppercase N		n	110	Lowercase n
Addotta, Jacob		/	47	Forward slash		O	79	Uppercase O		o	111	Lowercase o
Lawrence, Cole		0	48	Zero		P	80	Uppercase P		p	112	Lowercase p
Wilson, Matthew		1	49	One		Q	81	Uppercase Q		q	113	Lowercase q
James, Jonathan		2	50	Two		R	82	Uppercase R		r	114	Lowercase r
Geiger, Jessica		3	51	Three		S	83	Uppercase S		s	115	Lowercase s
Rekowski, Kory		4	52	Four		T	84	Uppercase T		t	116	Lowercase t
Kroll, Timothy		5	53	Five		U	85	Uppercase U		u	117	Lowercase u
Moncada, Cristian		6	54	Six		V	86	Uppercase V		v	118	Lowercase v
Chaney, Elijah		7	55	Seven		W	87	Uppercase W		w	119	Lowercase w
Robinson, David		8	56	Eight		X	88	Uppercase X		x	120	Lowercase x
Pierzynski, Matthew		9	57	Nine		Y	89	Uppercase Y		y	121	Lowercase y
Martinez, Luke		:	58	Colon		Z	90	Uppercase Z		z	122	Lowercase z
Yuan, Cameron		;	59	Semi-colon		[	91	Left square bracket		{	123	Left curly brace
Not assigned		<	60	Less-than sign		\	92	Back slash		|	124	Vertical bar
Not assigned		=	61	Equal sign		]	93	Right square bracket		}	125	Right curly brace
Not assigned		>	62	Greater-than sign		^	94	Caret		~	126	tilde
Not assigned		?	63	Question mark		_	95	Underscore		?	127	unknown