

1. Header

A-Team group number: aTeam 2

Project name: Matrix-Master calculator

Team Members:

Chengpo Yan LEC001 xteam186 - cyan46@wisc.edu

Jinming Zhang, LEC001, x-team132- jzhang2279@wisc.edu

Zexin Li LEC001 x-team145 - zli885@wisc.edu

Houming Chen, LEC001, xteam149 - hchen634@wisc.edu

Chengxu Bian, LEC001, xteam102 - cbian4@wisc.edu

Project description:

1. **Problem:** What problem does your program solve?

This is a Matrix-Master calculator. It not only can do the normal calculation (including parenthesis) like a normal calculator, but also supports matrix calculations, like doing matrix multiplication, finding the inverse, determinant, or eigenvalues of a matrix, doing LU or SVD decomposition, and more.

2. **Primary stakeholder:** Who will be the primary user of your program?

Students taking linear algebra classes like MATH 320 and 340 can use this calculator to better understand linear algebra. Normal calculation is also an important part, students no longer need to use the window's calculator which can only calculate two numbers once.

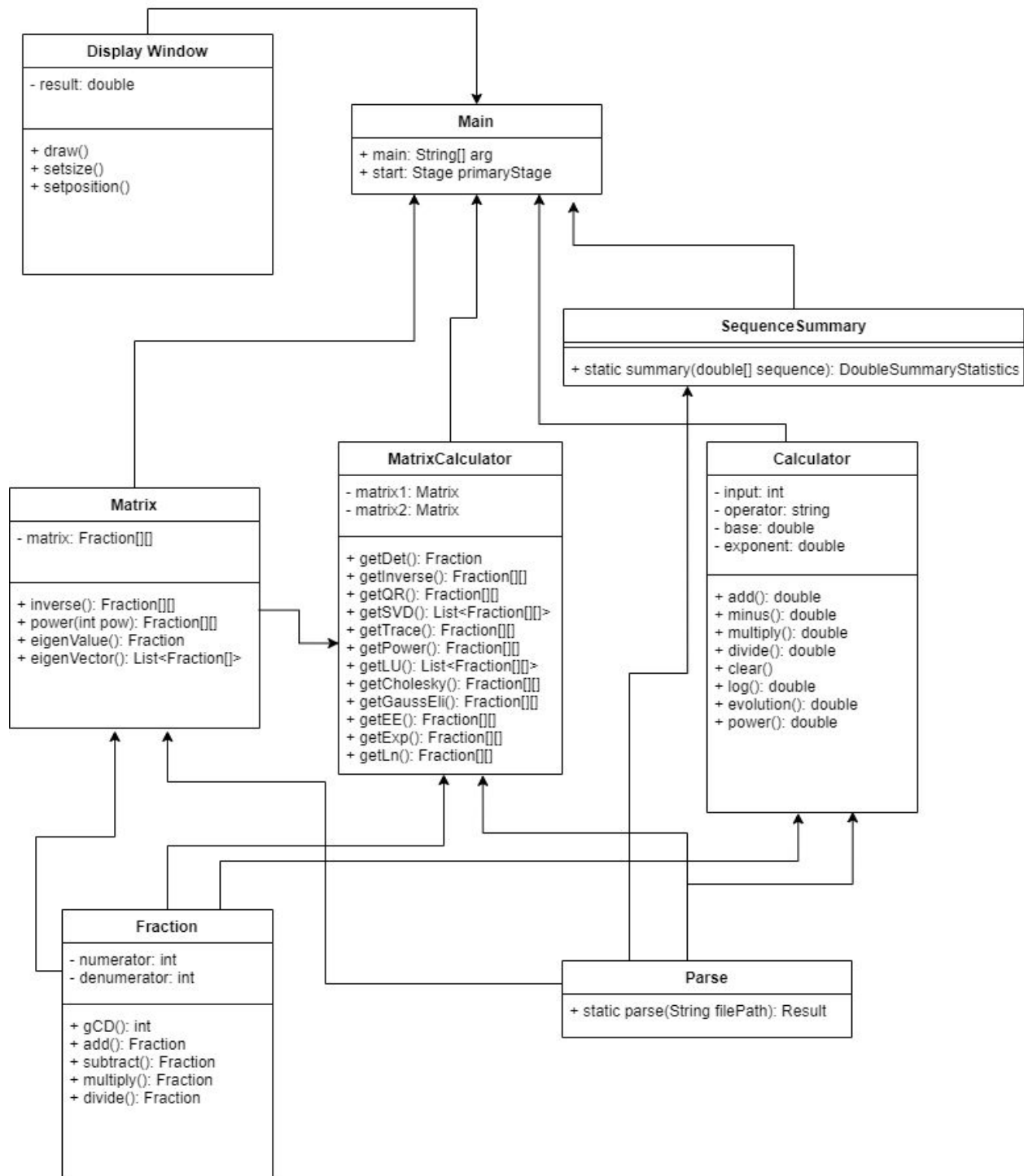
2. Class Summary

<i>enum, interface, class, abstract class</i>	<i>Name of the type</i>	<i>Description of use or purpose of this type</i>
class	Parser	The class that takes a string input and translate into computable program

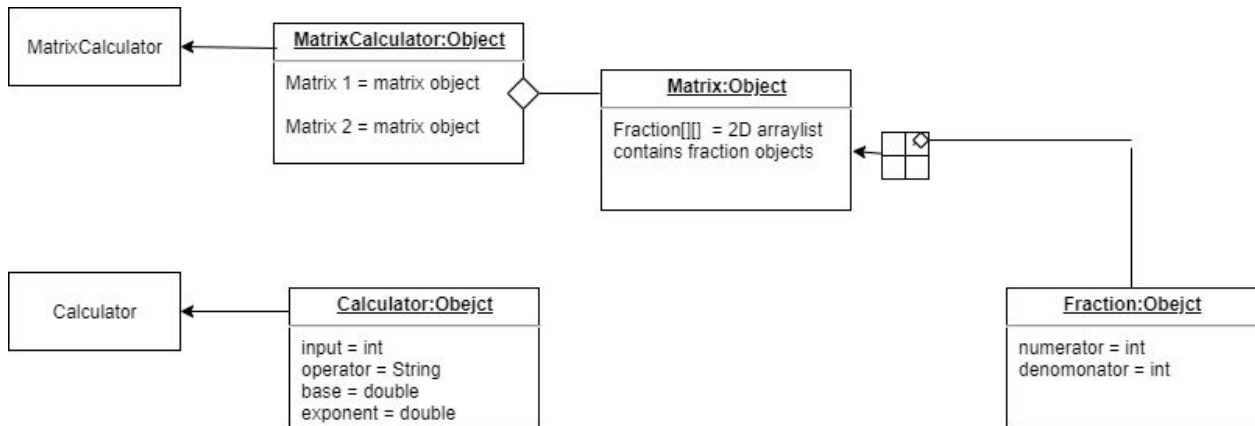
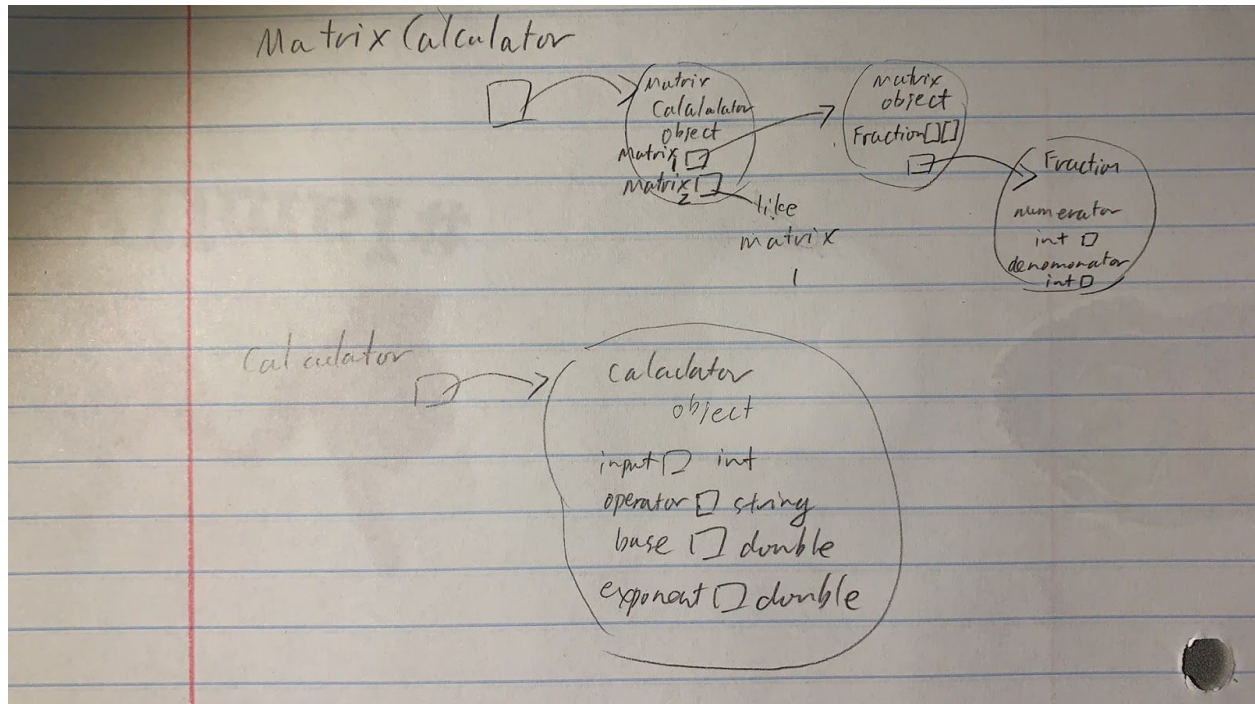
class	Matrix	A class defines Matrix object and basic functions
class	MatrixCalculator	A class defines Matrix algorithm
class	Fraction	A class that implements basic operation on Fraction
class	SequenceSummary	A class that summaries sequence
class	Calculator	The Calculator that computes normal computation
class	DisplayWindow	A GUI class that display result
class	Main	Mainframe of calculator's user interface.

3. Class Diagrams

Arrow pointing to means pointed class is based on the other class.



4. Object Diagrams



5. GUI Layout Sketch - an image saved in your design document

Matrix Calculator – Develop by A team 2

Menu

More Functions

More Functions

More Operations

About

1024

Row: 4

Column: 3

1

2

+

-

*

Row: 4

Column: 3

1

2

Trigonometry

Other Functions

Analyze Sequence

x	x!	π	e	C	←
√x	x²	()	exp	/
√ ^y x	x ^y	7	8	9	*
logx	10 ^x	4	5	6	-
log ₂ x	2 ^x	1	2	3	+
log _y x	lnx	+/-	0	.	=

Det

Inverse

QR

SVD

Trace

Power

2

LU

Cholesky

Gauss-Elimination

EigenValue & EigenVector

exp

ln