

Design of Real World Product

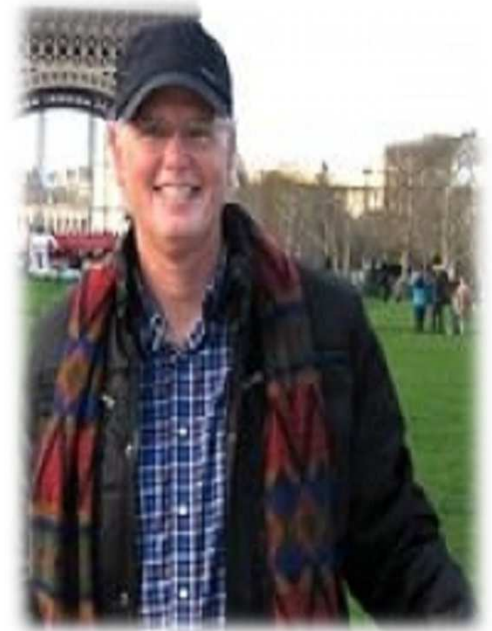


Presenters:

- Artem Fisan (Slash Reader)
- Cory Morewitz (Colrs)
- Justin Bennett (Colrs)
- Ming Jiang (Slash Reader)
- Erich O'Saben (Colrs)
- Charles Stafford (Colrs)

Our Mentor

Greg Raver-Lampman is an
instructor at the Old
Dominion University
English Language Center



Combined Problem Statement

There is a lack of software designed to improve the reading speed and comprehension specifically for English as a Second Language (ESL) Students.

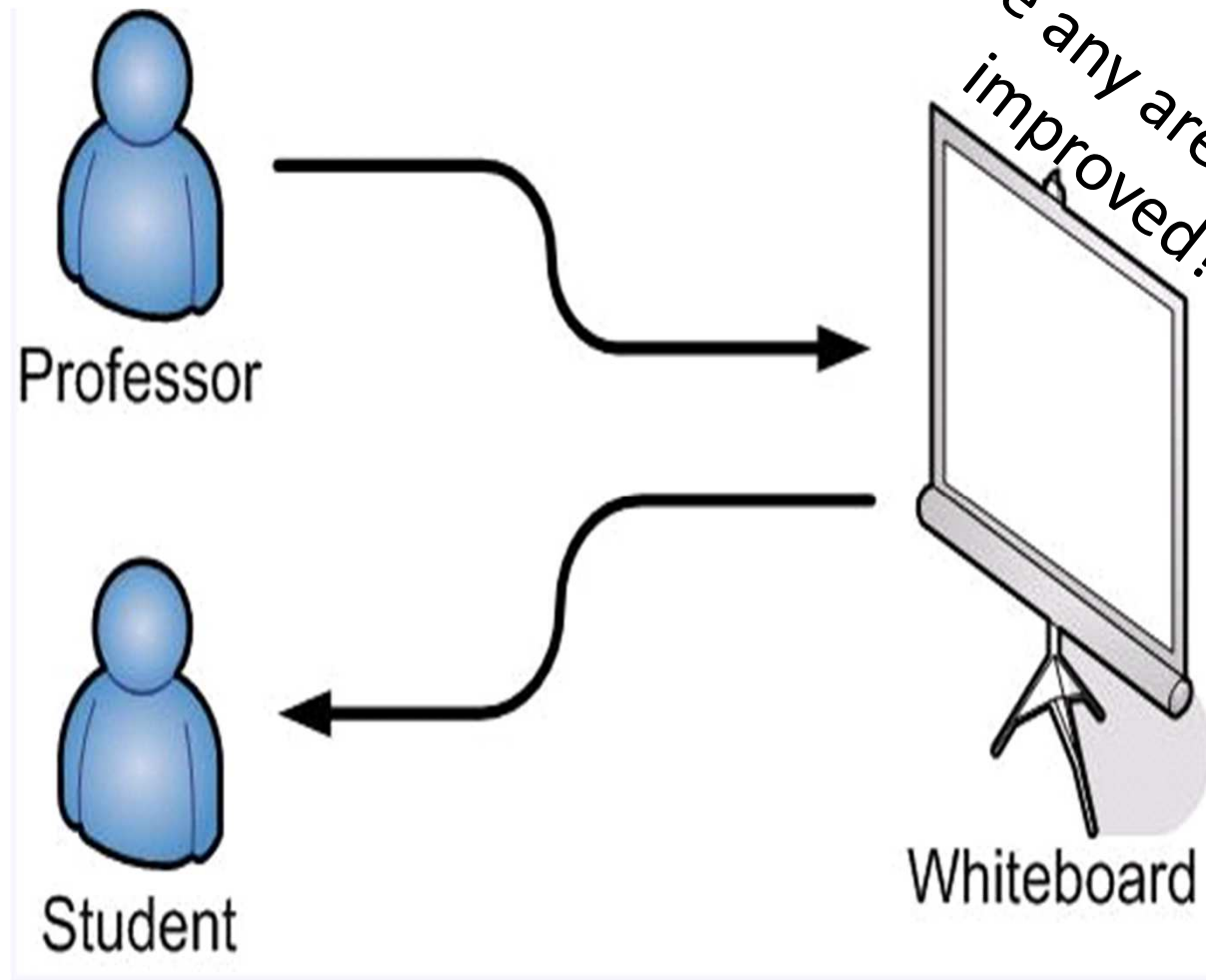
ESL Instructors have observed a shared difficulty among students in identifying parts of speech (POS) in the English language.

This is due in part to the highly variable sentence structures which sometimes means a noun is an adjective, or vice versa.

Combined Case Study

- ESL students are trying to succeed in Old Dominion University without any previous knowledge of English.
- Students have limited English experience and are expected to compete with native English speakers to get a college degree.
- ESL students want to learn but notice that reading comprehension can be a major obstacle.
- Student Visas are only for as long as the student is full time.
- If a student is unable to correctly understand material, they will fail, and have to spend a significant amount of time and money to succeed.

ESL at ODU



Can you see any areas that can be improved?

Combined Solution Statement

ESL Clash is a computer program that will incorporate two separate modules:

- . - Colrs will colorize text to identify different parts of speech to help facilitate ESL students' recognition and comprehension of parts of speech.
- . - Slash will use lexical bundles to reduce the number of fixations and regressions met by the reader.

This will help to improve ESL students reading efficiency and comprehension by providing a user friendly interface which renders the identification of parts of speech and lexical bundles in an easy to consume format.

Solution

What is a lexical bundle?

Lexical Bundle, or thought group, is group of words that occur repeatedly together within the same register. It is a group of words that present a thought together.



Solution

What is a lexical bundle? (cont.)

Lexical bundles are often a set of 3 or more words that are just about always together.

Lexical Bundle	Textbooks	Conversation
I don't know what		X
I don't want to		X
Do you want to		X
I was going to		X
Are you going to		X
I don't think		X
Would you mind	X	
In the United States	X	
At the end of	X	

COLRS Explained

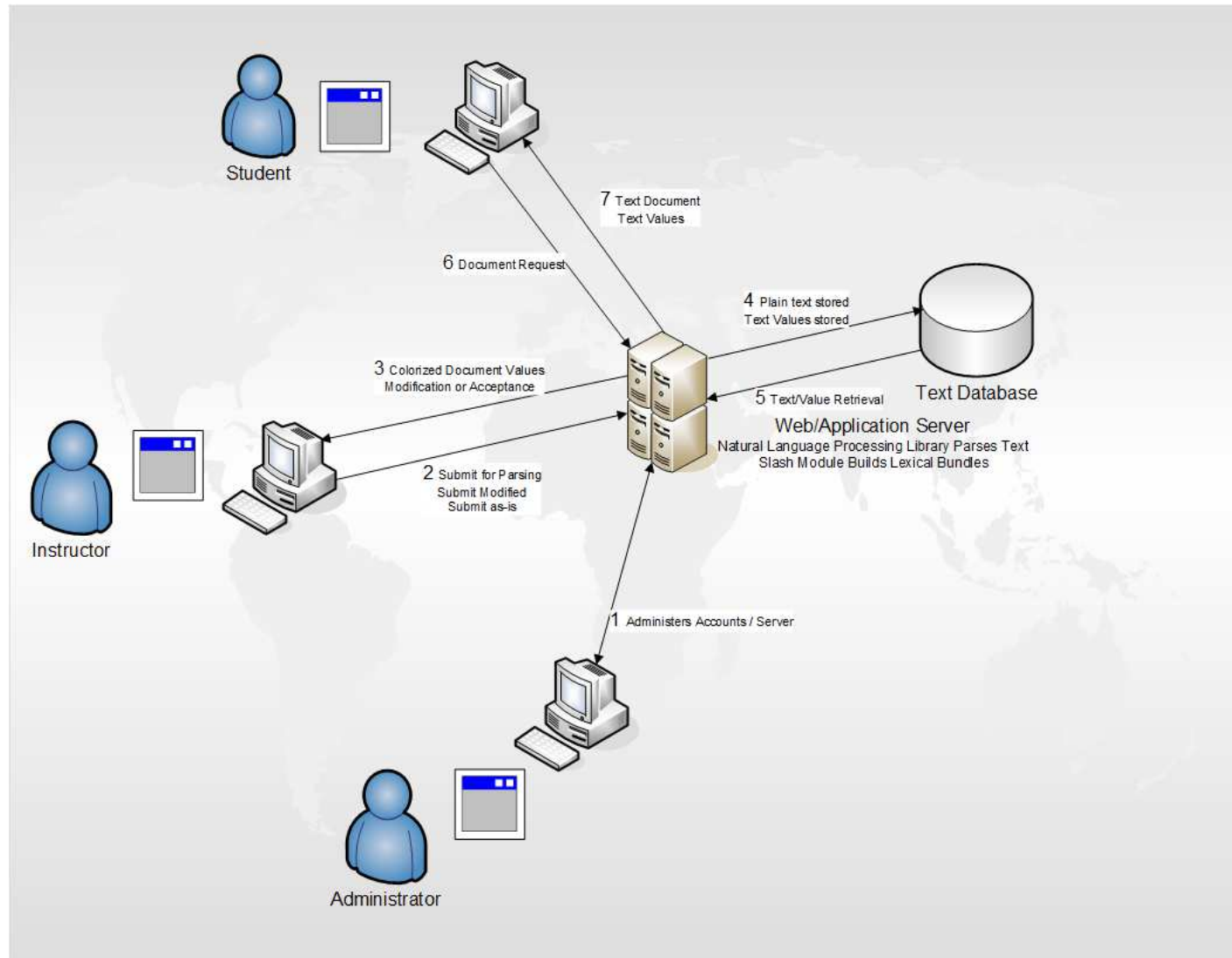
- Utilize open source Parts of Speech tagger as our “Engine”
- Output text in a clean and easy to consume format
- Allow for user intervention to change the Parts of Speech tag, if needed
- Save final versions of documents for later use

What makes our solution better?

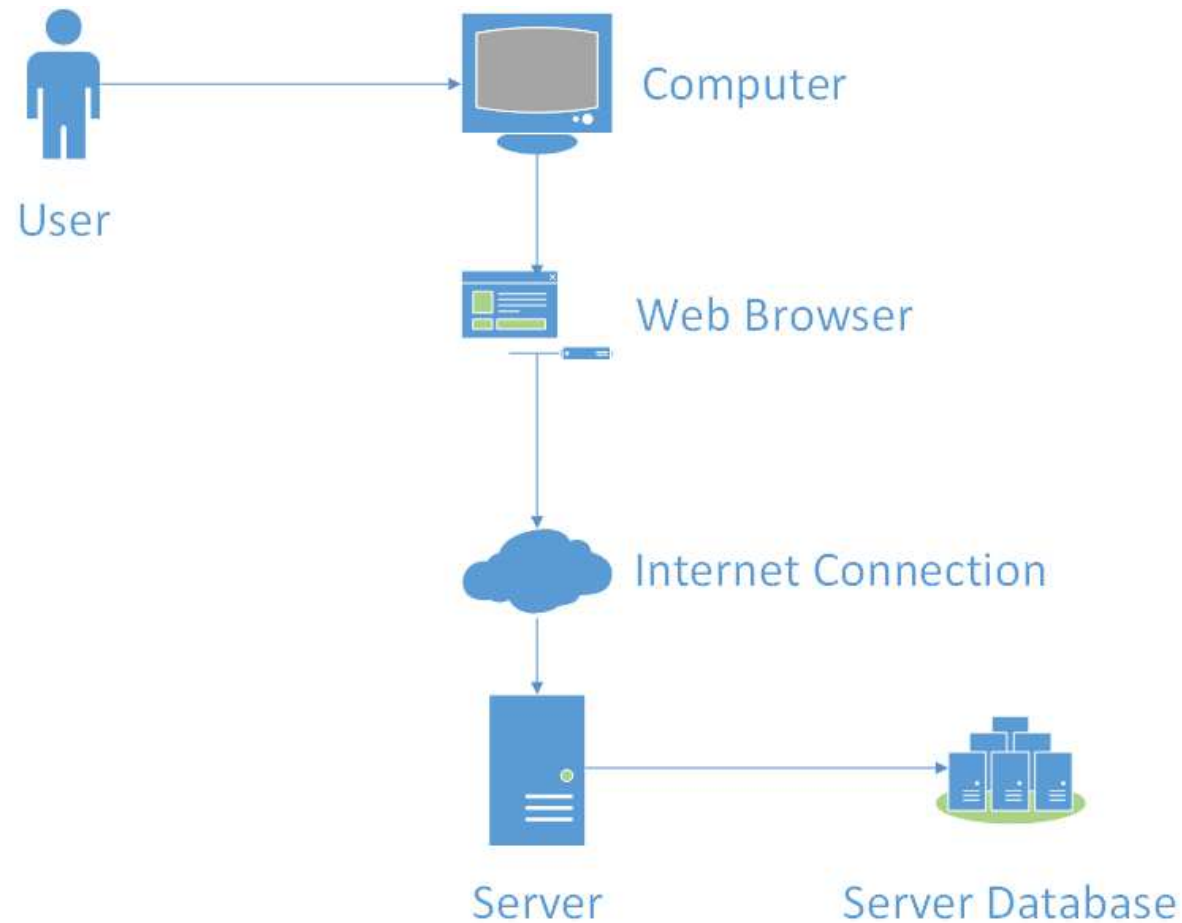
The Slash Reader is a web based application that gives:

- Ease of access
- Instructor Monitor Access (Admin Rights)
- Instructor Customization
- Individual Login
- Ability to save data (real time)
- Lexical bundle Algorithm

Proposed CLASH Process Flow

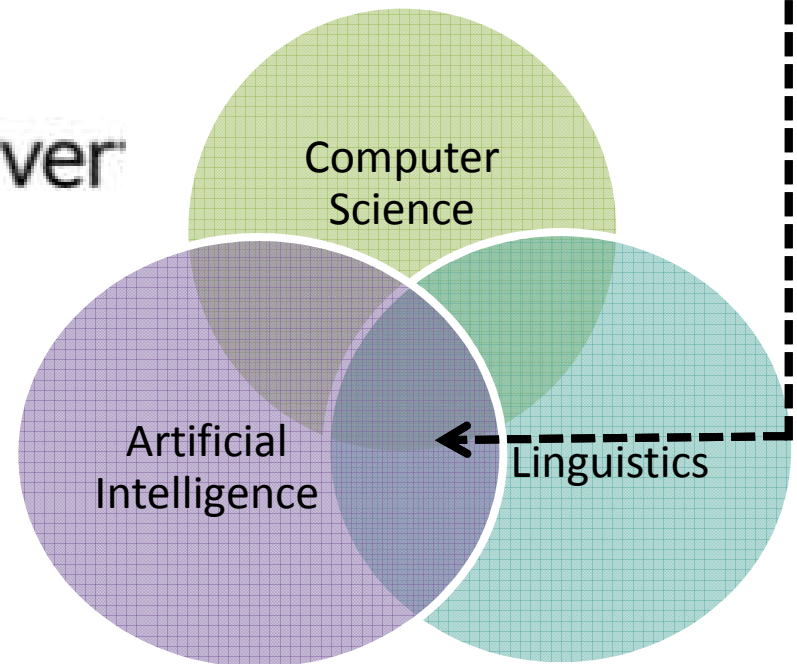


Hardware Requirements

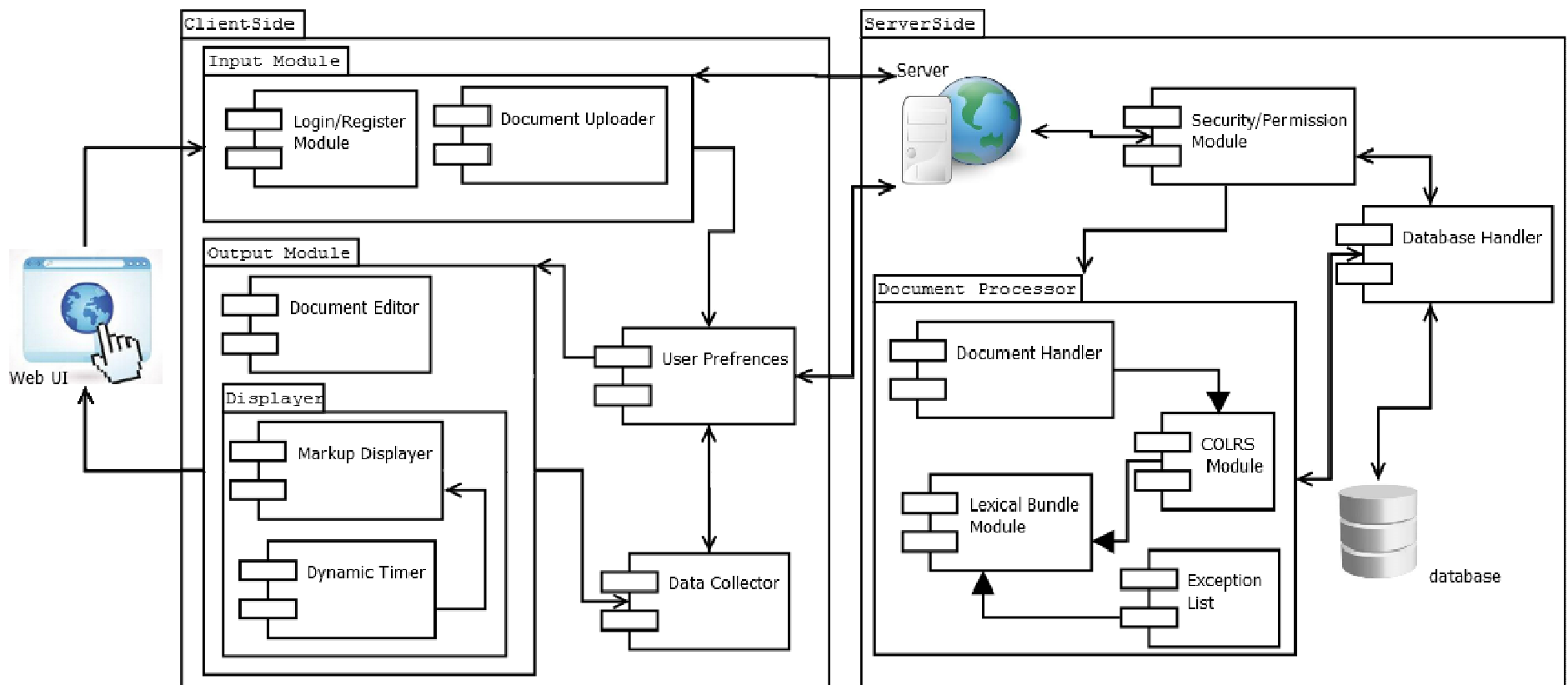


Software Requirements

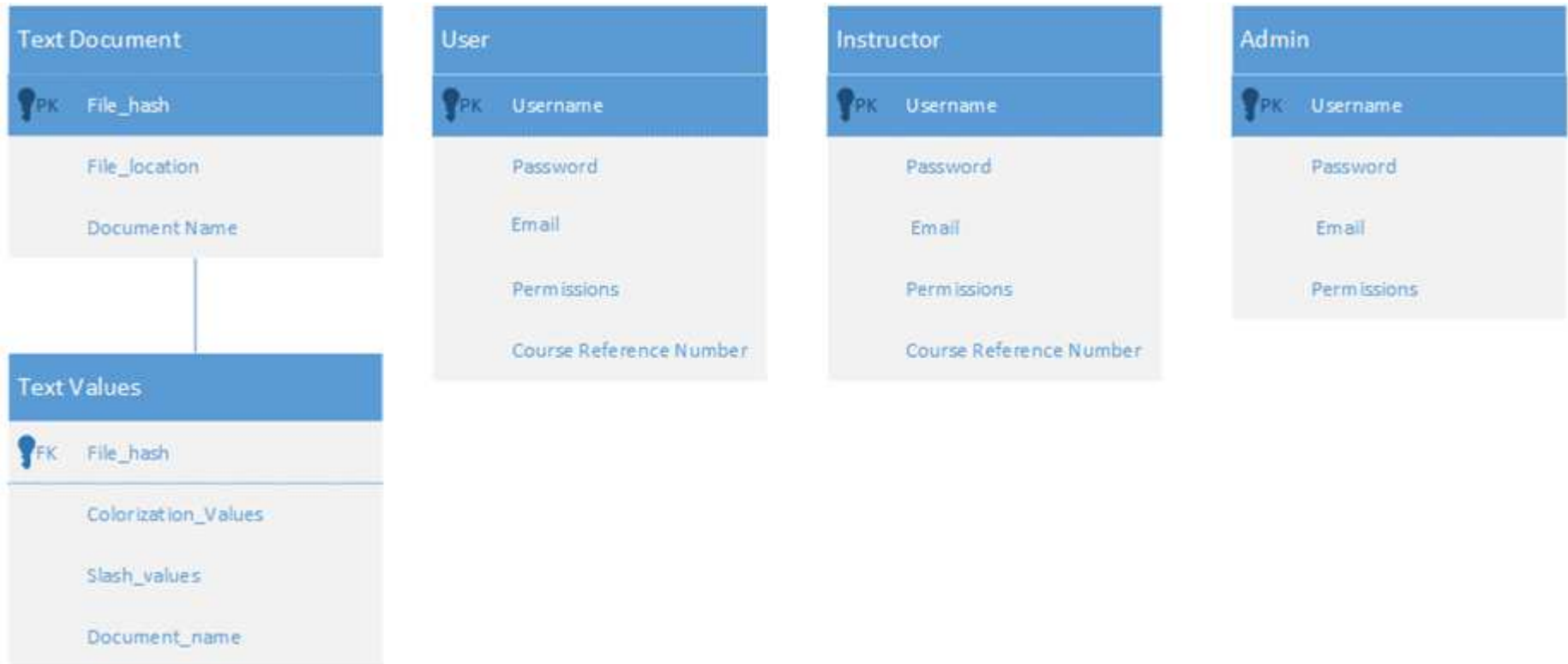
- Natural Language Processing Library
- SQL Server Express *Natural Language Processing*
- Node.js



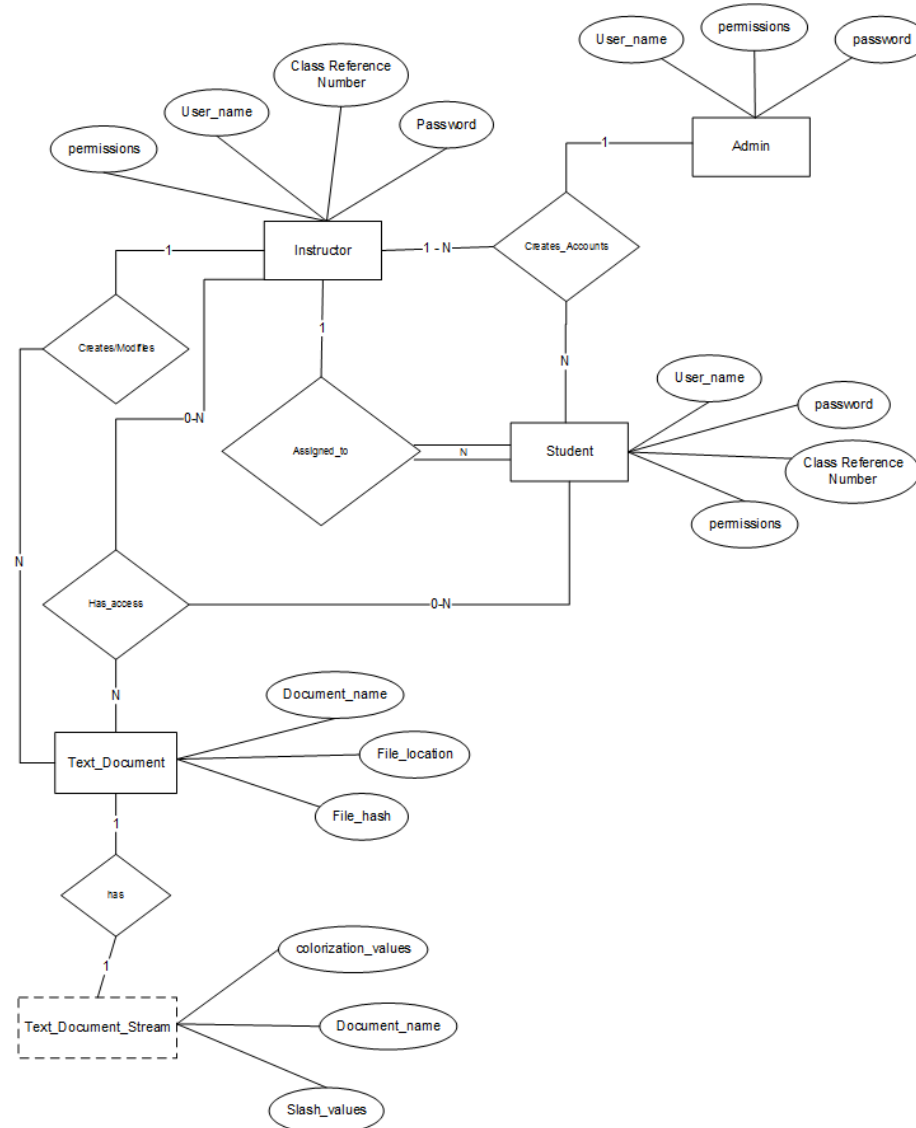
Major Functional Component Diagram



Database Schema



Entity Relation Diagram



Data Definition Language

Relation: Has

Attributes	Field Type	Key
Document_name	Char(20)	
File_hash	Char(16)	Yes

Relation: Has_access

Attributes	Field Type	Key
File_hash	Char(16)	Yes
Permissions	Int(0-5)	

Relation: Creates_Modifies

Attributes	Field Type	Key
Document_name	Char(20)	Yes
Permissions	Int(0-5)	

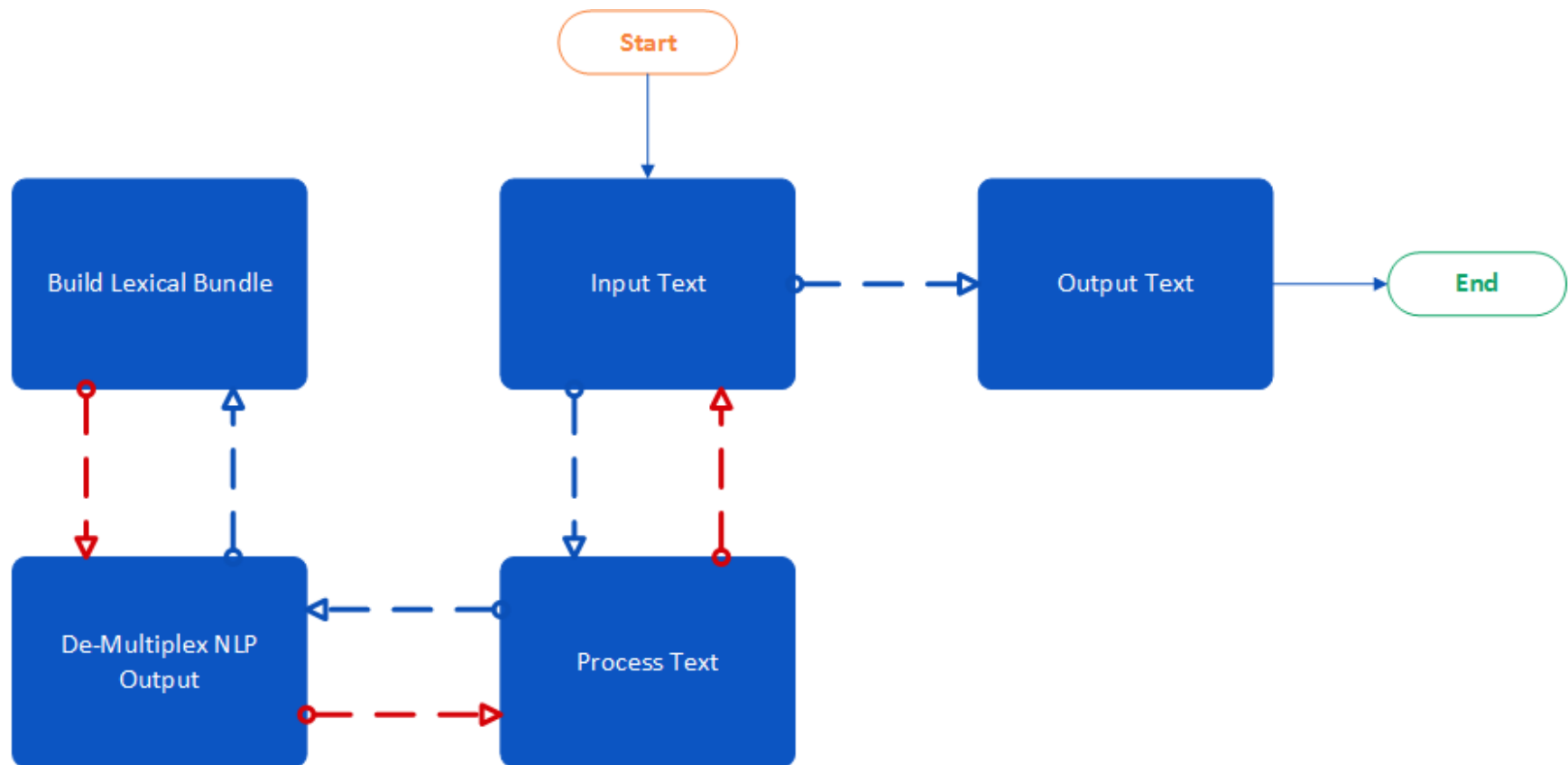
Relation: Assigned_to

Attributes	Field Type	Key
Instructor_name	Char(40)	
Student_name	Char(40)	Yes
Class Reference Number	Int(5)	Yes

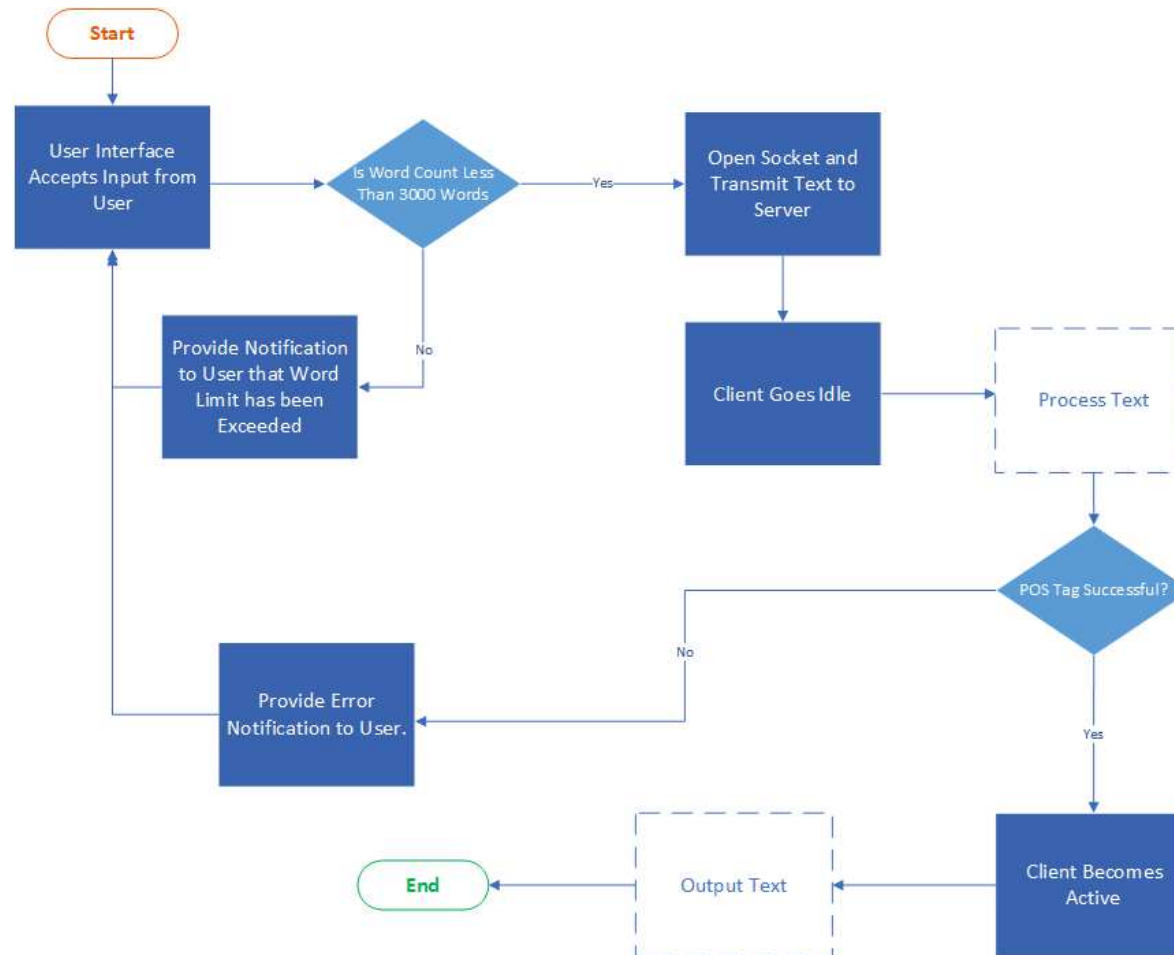
Relation: Creates_accounts

Attributes	Field Type	Key
User_name	Char(40)	Yes
Permissions	Int(0-5)	

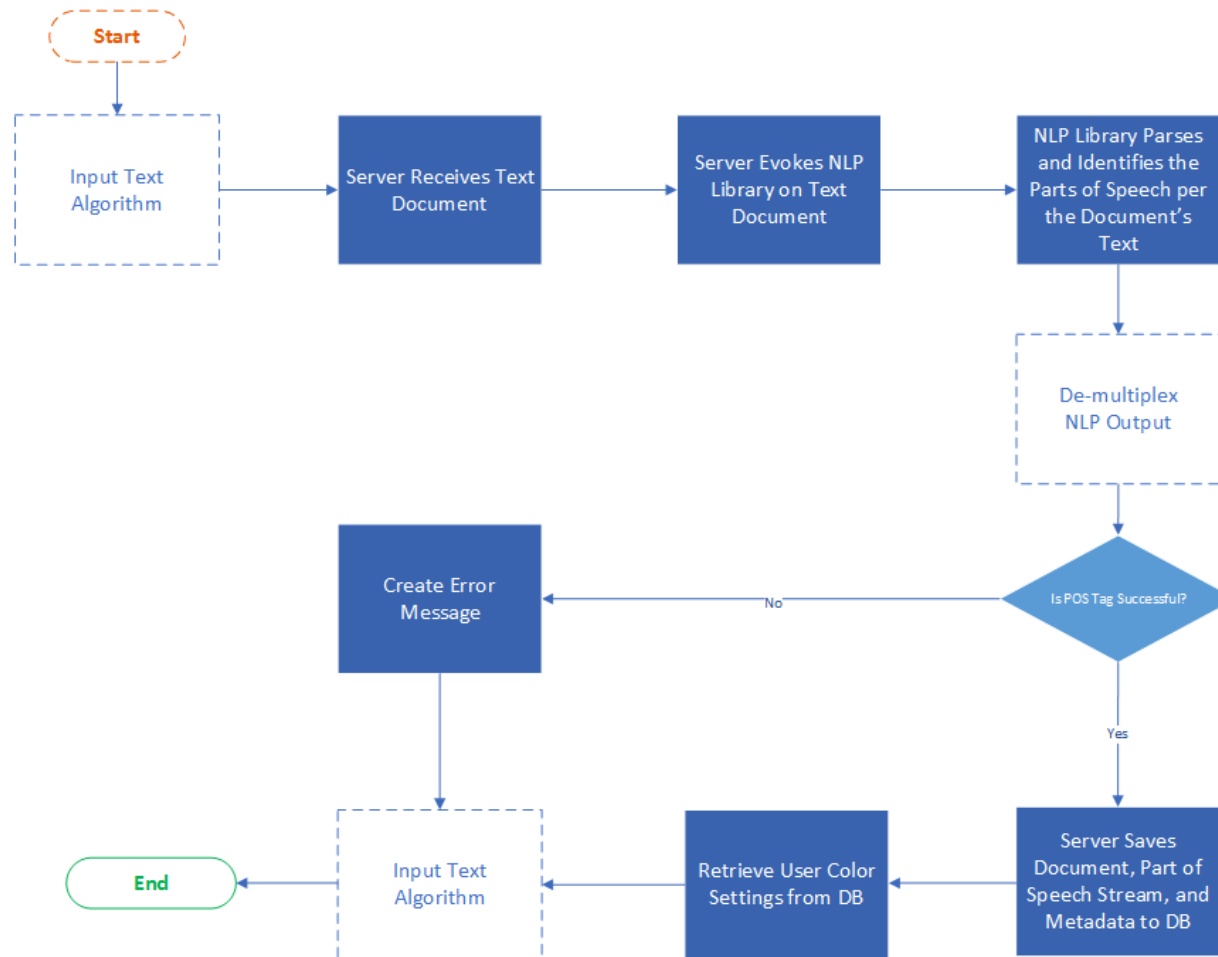
Algorithm Flow



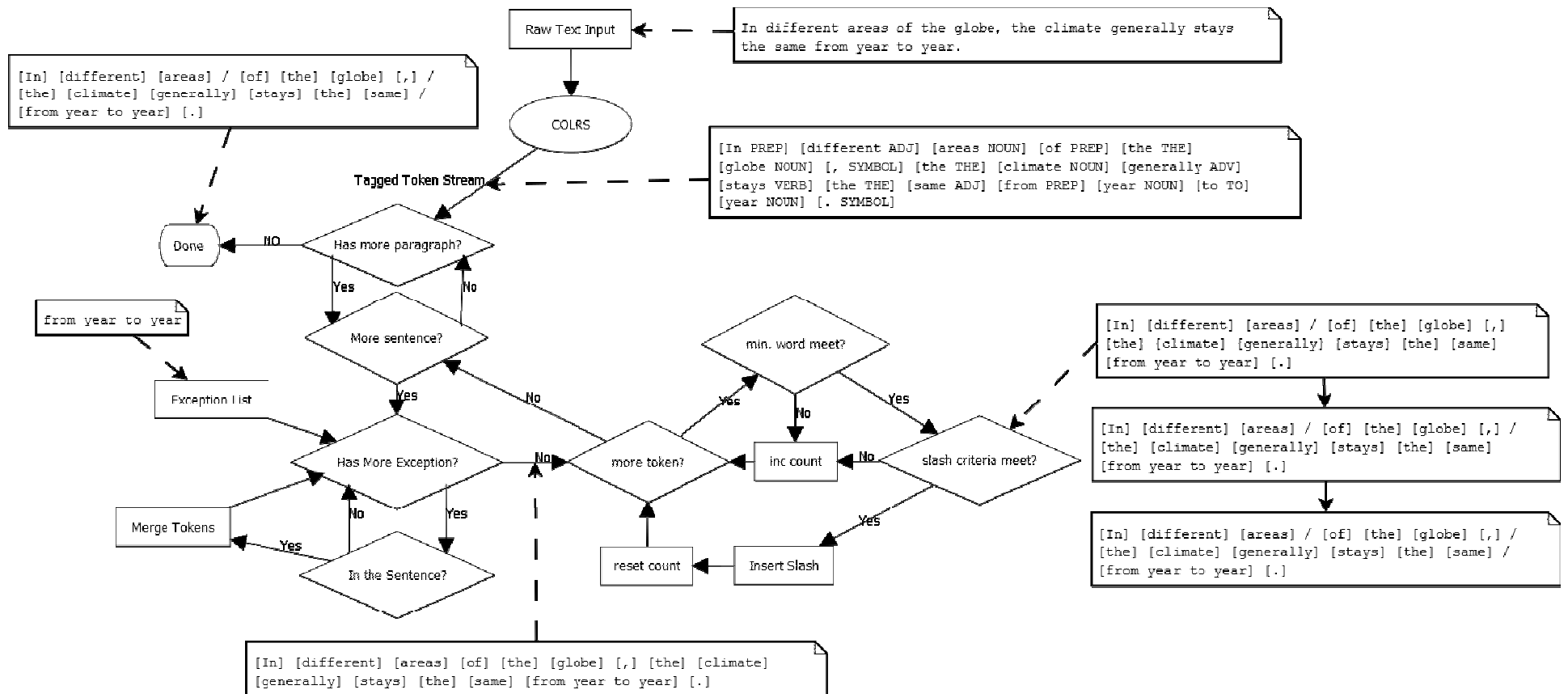
Input Text Algorithm



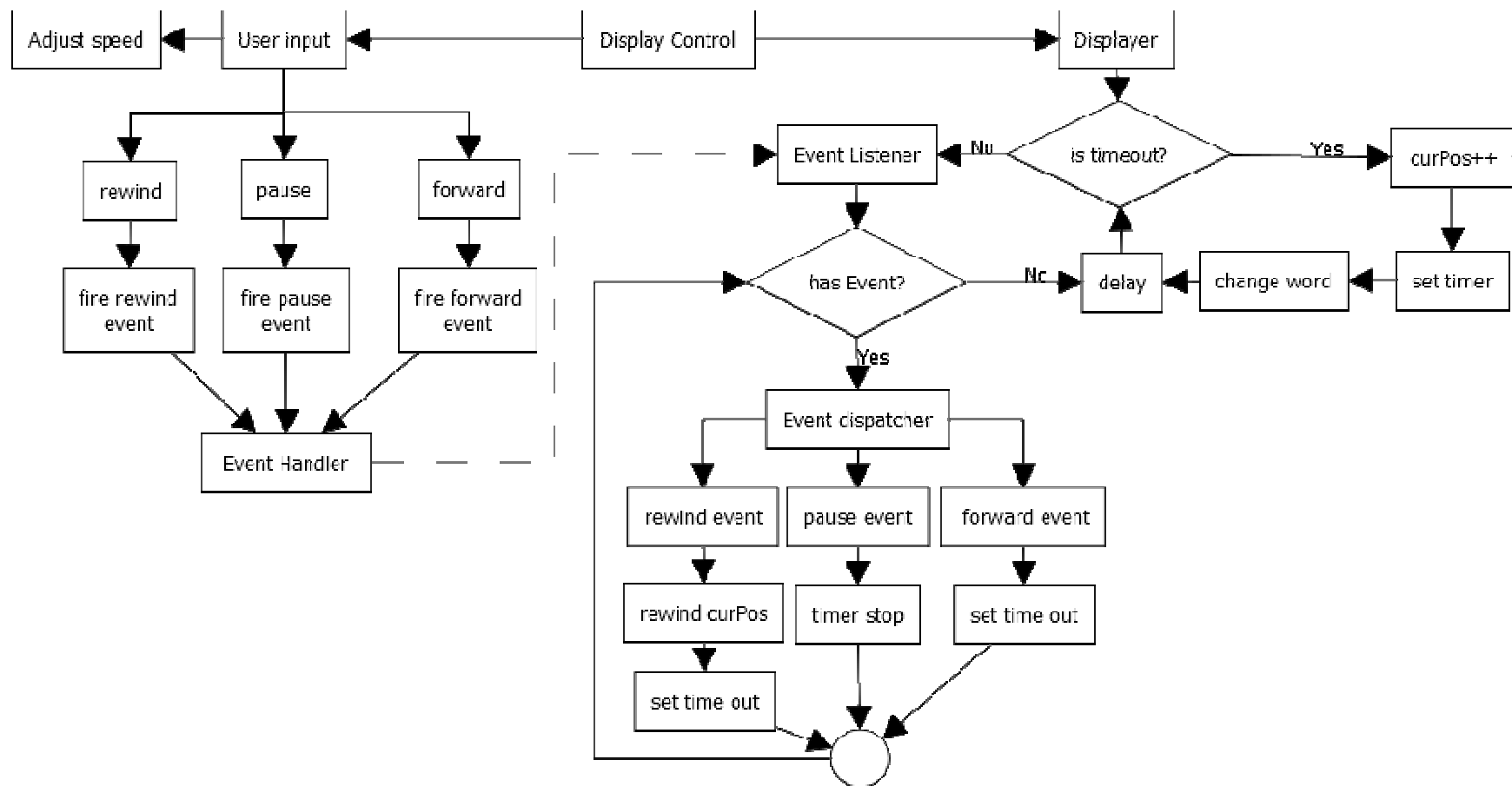
Process Text Algorithm



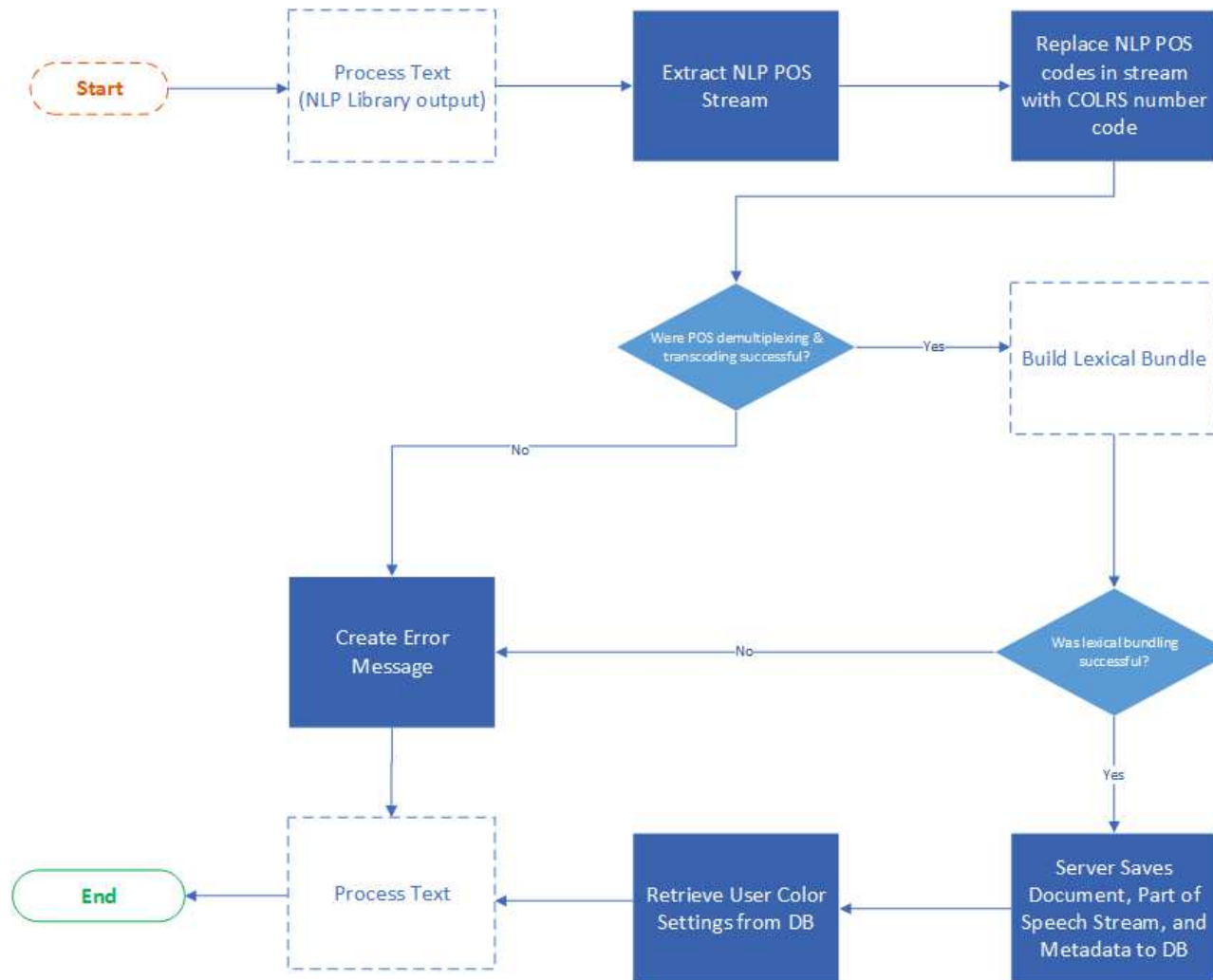
Slashing Algorithm



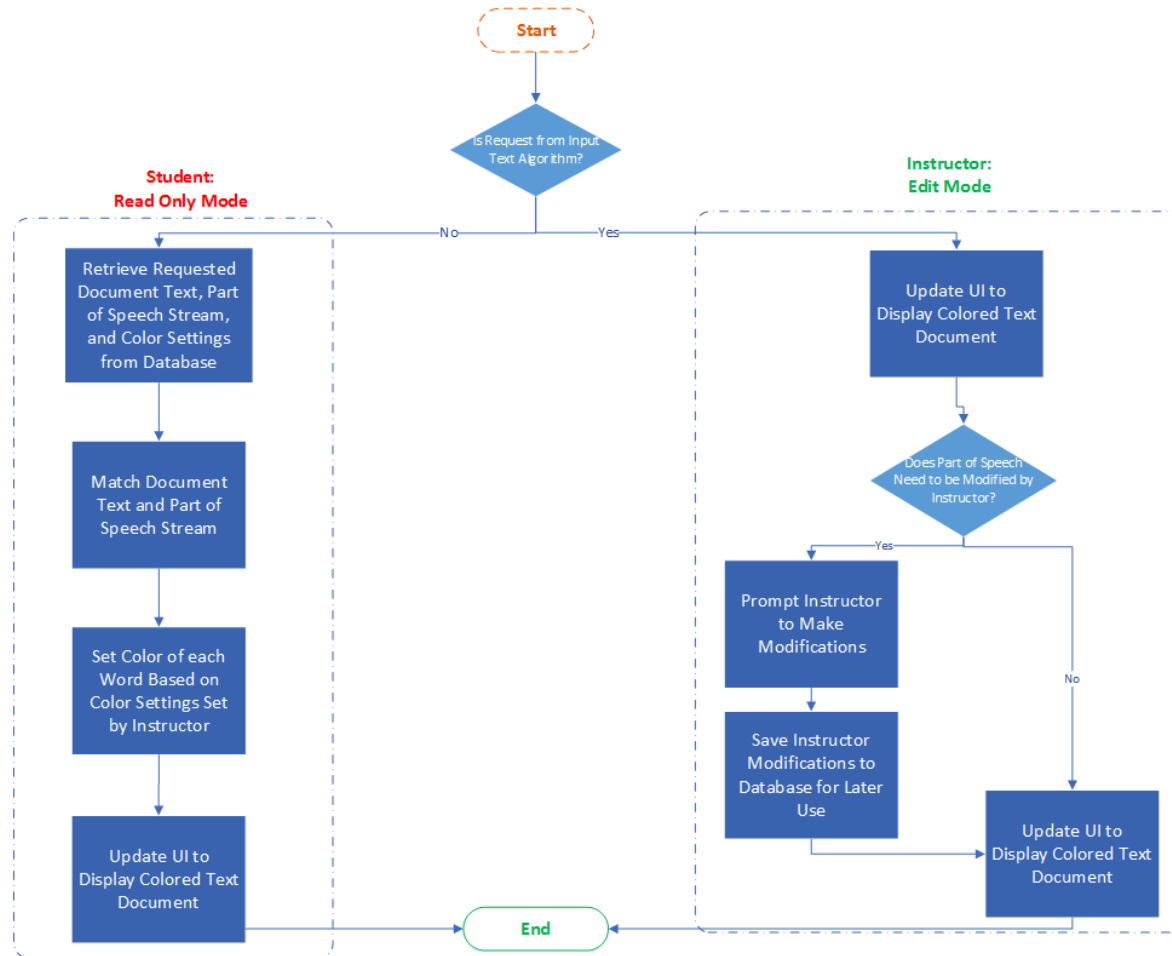
Display Control Algorithm






De-multiplex Algorithm



Output Text Algorithm



Login and Document Load

 <input type="text" value="Email"/> <input type="password" value="Password"/> Register Terms of Service Forgot Password 	<div><input type="checkbox"/> Colr</div> <div><input type="checkbox"/> Slash</div> <div>Example Text</div> <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur dignissim ac ante quis interdum. Curabitur dignissim ultricies egestas. Maecenas ut metus nisl. Pellentesque consequat sem vitae metus commodo, id maximus dolor ornare. Nulla risus, libero, finibus quis rutrum nec, bibendum et massa. Nam fringilla metus mi, eu vulputate diam facilisis sit amet. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Pellentesque vel pharetra mi. Sed quis purus ut tortor ullamcorper imperdiet vel id ipsum. Vivamus accumsan vitae dui nec ultricies. Morbi efficitur lorem nibh.</p> <p>Sed auctor pellentesque orci, sed ornare, nisi porta vitae. Morbi tincidunt leo quis sagittis accumsan. Proin id dapibus velit. Proin quis mauris nec arcu lacinia sodales, at non enim. Proin ac ligula et purus accumsan maximus. Proin dapibus nibh id libero finibus, vitae consectetur libero faucibus. Pellentesque vehicula libero hendrerit lorem consequat tincidunt. Aenean a dignissim ex, a euismod risus. Aliquam dui nibh, bibendum a rutrum ut, tristique eu nisl. Ut tincidunt consequat lacus, vitae auctor orci fermentum a. Donec nec nisl et risus sagittis tempor quis id tellus. Nulla cursus, sapien vitae egestas bibendum, erat tellus mollis orci, et facilisis urna leo nec ligula. Nunc vel tellus sapien. Nullam sollicitudin mauris augue, id finibus orci gravida ac. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Suspendisse sagittis elementum imperdiet.</p> <p>Curabitur leo tortor, rhoncus a accumsan eu, rhoncus laoreet nisi. Quisque nulla velit, efficitur et ante a, posuere tristique ante. Integer fringilla erat fringilla, sagittis diam eu, rhoncus mauris. Cras orci diam, rutrum id bibendum mattis, vehicula ac nisi. Aliquam molestie nibh quis nisi efficitur semper. Nunc posuere nec nibh nec hendrerit. Integer erat dolor, egestas sollicitudin lectus ut, lacinia aliquam leo. Sed consequat sit amet odio ut aliquet. In tincidunt arcu ac vestibulum malesuada. Aliquam semper viverra augue, ac faucibus sem ornare ut. Pellentesque sit amet ex elit. Curabitur eu nulla quis orci maximus suscipit. Quisque orci nulla, facilisis sed vestibulum eget, malesuada id mauris.</p> <p>Nunc luctus, leo quis fermentum cursus, arcu nisi tempor elit, placerat mattis diam odio vitae leo. Quisque ipsum diam, sagittis sit amet pellentesque sit amet, accumsan nec augue. Sed leo erat, pretium ac lacus eu, luctus efficitur tortor. Mauris tempus odio nunc, vitae maximus metus iaculis at. Fusce pretium dictum consequat. Integer eget elit hendrerit risus mollis aliquet. Duis eget molestie diam, vitae dignissim dui. Maecenas tempor aliquet mi, in posuere eros cursus quis. Suspendisse interdum purus eu elit lobortis feugiat. Donec eu justo ut ipsum ullamcorper condimentum. Maecenas id lacinia urna.</p> <p>Curabitur luctus venenatis auctor. Vivamus nec ligula tempor, ullamcorper augue non, interdum odio. Nunc egestas aliquam leo. Suspendisse euismod lectus et ante consectetur pellentesque. Integer commodo, elit nec convallis euismod, dolor sapien aliquam velit, a scelerisque libero est vitae urna. In hac habitasse platea dictumst. Nam placerat nulla neque, id tincidunt elit facilisis a. Phasellus at hendrerit neque. Nunc ut dignissim lacus.</p> <div></div>
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Student View Colrs with optional Slashes



Instructor

Select Document

Show me:

☒ Noun

☐ Pronoun

☒ Verb

☒ Adjective

☐ Adverb

☐ Preposition

☐ Conjunction

☐ Interjection

☒ Slash

☒ Colr
 ☐ Slash

Student Marked Example

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Slash Module

The screenshot displays the 'Slash Module' interface. On the left is a sidebar with the 'CLASH' logo (stylized colorful letters) and two dropdown menus labeled 'Instructor' and 'Select Document'. The main area features a title bar with 'Colr' (unchecked) and 'Slash' (checked) options, and a subtitle 'Lexical Bundle Example'. The central slide contains the text 'Hendrerit lorem consequat tincidunt.' Below the text are four circular navigation buttons (back, stop, pause, forward) and two horizontal progress bars. A '<<' button is located at the bottom left of the sidebar.

Slash Reader vs. Competitors

COMPETITION MATRIX					
	Slash Reader		spreeder.com	Spritz	Eyercize
Web-based	✓		✓		✓
User-controlled Speed	✓		✓	✓	✓
Ebook-compatible	✓			✓	
Instructor Monitored	✓				
Individual Logins	✓				
Saved Activity Data	✓				
Uses Lexical Bundles	✓				
Instructor Customizable	✓				
Free	✓		✓		✓

Colrs vs. Competitors

	COLRS	Stanford	Illinois	Children's games (Grammar Gorillas, British Council Games)	ZZCad	Xerox
Ease of use	✕		✕	✕		✕
POS Recognition	✕	✕	✕		✕	✕
POS marking (color)	✕		✕	✕		
Easy to read output	✕		✕	✕	✕	
Editable output	✕					
Target audience (ESL students)	✕					
Simple interface	✕		✕	✕	✕	✕
Custom input	✕	✕	✕		Limited	✕
Fast & Efficient	✕	✕	✕		✕	✕

Customer Risks

	Impact				
Probability	1	2	3	4	5
1	C4	C3			C1
2					
3				C2	
4					
5					

C1: Customer adoption
 C2: Interface complexity
 C3: Limited output
 C4: User adoption

Customer Risk Mitigation

	Impact				
Probability	1	2	3	4	5
1	C4	C3			C1
2					
3				C2	
4					
5					

C1: Mentor involvement

C2: Simple UI

C3: Necessary output with scalability

C4: User stories/testing

Technical Risks

	Impact				
Probability	1	2	3	4	5
1					T2
2			T3		T1
3					
4	T4				
5					

T1: Slash integration

T2: Part of Speech tagging

T3: Runtime

T4: Limited import options

Technical Risk Mitigation

	Impact				
Probability	1	2	3	4	5
1					T2
2			T3		T1
3					
4	T4				
5					

T1: A merger with Slash

T2: Utilization of existing software

T3: Runtime testing and optimization

T4: Necessary import options with customer approval

Questions?

References

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- Professor Greg Raver-Lampman – Mentor
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