

# Acceptance Test

## Subconscious Analysis Software (SAS)

**Requested by:**

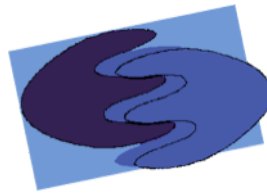
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## System Review

### 1.1 Product Overview

Our client, Dr. Breimer, is interested in researching biases using Implicit Association Tests (IATs). An IAT is a tool used by psychologists to test a person's bias of particular subjects based on the time it takes them to categorize stimuli objects relating to the subjects in question.

An IAT includes both a general demographic survey and the test itself. The survey is given to the participant before they take the test, so that whoever is viewing the data is able to thoroughly use the data to make conclusions. The reaction time test consists of four categories, including two pairs of opposites to compare to one another, and a set of stimuli objects associated with each category. One category from each pair is referred to as a primary category. These two categories are the main subjects that the test is checking for a bias. For example, a test may be as follows: the pair of opposites could be female and male, while the comparison pair could be computer science and liberal arts. This test example might check whether an IAT participant has positive or negative feelings about females in the computer science field, and how strong those feelings are. The primary categories in this example would be female and computer science.

The associated stimuli objects can be either pictures or words that correspond to the categories. A participant categorizes a stimuli object quickly by pressing one of two keys on their keyboard. The time it takes a participant to categorize certain stimuli is what helps calculate the bias they may have. Due to the fact that there are 200 associations, split into 6 blocks, in each test, creating IATs and collecting the data from them can be very time consuming. enigma elucidation has created a website where Dr. Breimer can log in as the administrator and create IATs. This software system, called Subconscious Analysis Software (SAS), generates a URL for each IAT created, which Dr. Breimer can then give to anyone he wishes to be a participant. SAS stores data and calculate results for each participant, which Dr. Breimer will be able to view and export in different formats that will help him further his research interests.



## **2. Requirements Inventory**

### **2.1 User Case Narratives**

There will be two users of SAS, the administrator and the participant. While using SAS, these two types of users will have access to IATs, but in different ways. The admittances of the two users of SAS are described below.

#### **2.1.1 Dr. Breimer / SAS Project Client / SAS System Administrator**

There will be a single administrator account for this system. The Administrator will be the client, Dr. Eric Breimer, and anyone else Dr. Breimer decides to share the account with. The Administrator will log into FSH's FILET. His identifying information will be retrieved from FILET by SAS, so Dr. Breimer does not have to log into SAS. Once logged in, the Administrator has the ability to create new IATs. The Administrator will be able to log into LimeSurvey to create a unique demographic survey to help the Administrator analyze the new IAT. The Administrator can insert categories and selected stimuli associated with these categories. After all of the stimuli objects are chosen, the Administrator has the option to choose whether or not a Participant will be able to view the Participant's results after the Participant is done taking the IAT. When the Administrator is finished creating an IAT, the Administrator can save the IAT. On saving, a URL will be created and in the database. This URL can be viewed through FILET. The Administrator may logout of the system at anytime.

#### **2.1.2 IAT Participant**

The IAT Participant is anyone who is given a URL to a specific IAT by the Administrator and chooses to take that IAT. When the IAT Participant takes the IAT, the IAT Participant will first be presented with a brief but detailed demographic survey that is associated with the IAT. After completion of the survey, the Participant can take the test.



## 2.2 Functional Requirements Inventory

The functional requirements inventory is the part of the acceptance test that checks if the functional requirements of SAS are met. The functional requirements are components that can be tested and then classified as either met or unmet based on the data the unit tests provide. The functional requirements inventory will act as a checklist to ensure that the requirements of our client, Dr. Breimer, are met. Below is a checklist based on the functional requirements for the two users of SAS, the administrator and the participant.

### 2.2.1 Administrator

YES	NO	Will be able to securely log into SAS using the registered username and password
YES	NO	Will be able to retrieve password via email from “Forgot Password” link
YES	NO	Will be able to create IAT
YES	NO	Will be able to enter four unique categories
YES	NO	Will be able to choose stimuli objects, words or images, associated with each category
YES	NO	Will be able to delete stimuli objects before completing IAT
YES	NO	Will be able to create demographic survey
YES	NO	Will be able to choose whether or not a participant will be able to view their test results
YES	NO	Will be able to log out of SAS

### 2.2.2 Participant

YES	NO	Will be able to take an IAT
YES	NO	Will be able to fill out a demographic survey
YES	NO	Will be able to view directions on how to take an IAT
YES	NO	Will be able to view all of the categories and the stimuli objects correlated with them
YES	NO	Will be able to take the test by categorizing stimuli for 6 different blocks
YES	NO	Will be able to categorize stimuli by pressing the I or E keys on their keyboard



YES	NO	Will be able to press the spacebar to move onto the next block
YES	NO	Will be able to view results if the administrator allows

## 2.3 Non-Functional Requirements Inventory

The following is a list of non-functional requirements of SAS. Below are requirements that specify how the system should be; that is, what qualities the system should have as opposed to what the system should do (functional requirements).

- The system must be aesthetically pleasing
- The system must be easy to use
- The system must be independent of any localized server
- The system must be platform independent

## 2.4 Requirements Testing/Evaluation

In order for enigma elucidation to test our system's functional and non-functional requirements, we have divided our system into logical units which represent each of the major functions that are required for SAS. The functional requirements can be found in section 2.2 of the Acceptance Test document. Each unit is further divided into test cases. These are individual actions that when used together complete a unit. We will first test all of the test cases separately to make sure they have been implemented correctly and functioning as expected. After testing each case we will be able to test them as a unit, called unit tests. We will test the unit cases that other unit cases depend on first. This way, if an error is discovered in these first to be tested cases, we won't have to restart testing from the beginning upon fixing the error. In the event that we are testing one unit that is both depended on and depends on other units, we will retest the associated units after any errors are found and corrected in that particular unit. This process is known as integration testing. This process of performing tests that take into account how the performance is of units change due to changes in dependencies is called integration testing. Finally we will test will test our system as a whole to ensure that all functional requirements have been met.

If there are major changes to the implementation of any function during the testing process a regression test will be performed to ensure that all of the pieces of SAS are still functioning correctly. This regression test will consist of an integration test performed on the unit that was changed.

Once all of the functional requirements are met, we will test the non-functional requirements to the best of our ability. We will perform the "Stupid Roommate Test" by showing our product to our peers, and making sure that they find SAS aesthetically pleasing, can figure out how it works, and cannot break the code. We will also test the product on multiple platforms to make sure there are no compatibility issues. SAS is being developed run independent of any localized server. To test this, we will run our program from multiple servers.

Finally, after all testing is performed and it is confirmed that SAS is functioning as expected and to the standards of enigma elucidation we will present our system to our client, Dr.



Eric Breimer, who will perform the final test, the acceptance test. The acceptance test will involve both the functional and non-functional requirements. Dr. Breimer will either accept or reject our implementation based on whether or not his functional or nonfunctional requirements are met. More information can be found regarding our tests and results in Appendix A: Test Plan.

## 2.5 Future Enhancements

If we had more time, enigma would implement a cheat detection algorithm that would determine whether an IAT test participant at any point during the IAT stopped taking the test honestly and attempt to answer in such a way as to skew the results. However, as all of us are graduating, we don't have the time to implement such an algorithm, let alone formulate it.



### 3. External Design Specifications

#### 3.1 User Displays

##### 3.1.1 Survey ID

The screenshot shows a web interface for creating a new IAT test. At the top, there is a purple header with the text "Implicit Association Test Creation & Analysis" on the left, a logo of puzzle pieces forming a butterfly in the center, and "POWERED BY: Subconscious Analysis Software enigma elucidation Fabricating IAT Luminating Existing Thinking FSH Technologies" on the right. Below the header, the main content area is white and contains the heading "Create a New IAT Test". Underneath, it says "Step 1: Create Survey" and features a "Create Survey" button. Below that is a "Survey ID:" label followed by a text input field and an "Add Survey" button. At the bottom left, there are links for "Developer's Websites: enigma elucidation FSH Tech" and at the bottom right, a "Logout" link.





### 3.1.2 Choose Categories

Implicit Association Test  
**Creation & Analysis**

**enigma elucidation**  
Fabricating IAT Luminating Existing Thinking  
**FSH Technologies**

## Create a New IAT Test

**Step 1: Create Survey**

[Create Survey](#)

Survey ID:  [Add Survey](#)

**Step 2: Create Test**

Choose Categories

	Primary	Opposite
One:	<input type="text"/>	<input type="text"/>
Two:	<input type="text"/>	<input type="text"/>

[Update](#)

Developer's Websites:  
[enigma elucidation](#)  
[FSH Tech](#)

[Logout](#)



### 3.1.3 Choose Stimuli

**Create a NEW IAT TEST**

**Step 1: Create Survey**

[Create Survey](#)

Survey ID:  [Add Survey](#)

**Step 2: Create Test**

**Choose Categories**

	Primary	Opposite	
One:	<input type="text" value="Smile"/>	<input type="text" value="Frown"/>	<a href="#">Update</a>
Two:	<input type="text" value="Happy"/>	<input type="text" value="Sad"/>	

**Choose Stimuli**

Word  Image

Word	Smile	Frown	Happy	Sad	
<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<a href="#">Add</a>

Developer's Websites:  
[enigma elucidation](#)  
[FSH Tech](#)

[Logout](#)



### 3.1.4 Choose Stimuli Word

#### Step 2: Create Test

##### Choose Categories

	Primary	Opposite	
One:	<input type="text" value="Smile"/>	<input type="text" value="Frown"/>	<input type="button" value="Update"/>
Two:	<input type="text" value="Happy"/>	<input type="text" value="Sad"/>	

##### Choose Stimuli

Word  Image

Word	Smile	Frown	Happy	Sad	
<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="button" value="Add"/>

##### Added to Your Test:

Stimuli	Category	Delete
enigma	Smile	<input type="button" value="Delete"/>
Not enigma	Frown	<input type="button" value="Delete"/>
FSH	Happy	<input type="button" value="Delete"/>
not FSH	Sad	<input type="button" value="Delete"/>

Developer's Websites:  
[enigma elucidation](#)  
[FSH Tech](#)

[Logout](#)



### 3.1.5 Choose Stimuli Image

#### Step 2: Create Test

##### Choose Categories


	Primary	Opposite	
One:	<input type="text" value="Smile"/>	<input type="text" value="Frown"/>	<input type="button" value="Update"/>
Two:	<input type="text" value="Happy"/>	<input type="text" value="Sad"/>	

##### Choose Stimuli

Word  Image

**Image**

	Smile	Frown	Happy	Sad	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="button" value="Add"/>

##### Added to Your Test:

Stimuli	Category	Delete
enigma	Smile	<input type="button" value="Delete"/>
Not enigma	Frown	<input type="button" value="Delete"/>
FSH	Happy	<input type="button" value="Delete"/>
not FSH	Sad	<input type="button" value="Delete"/>



### 3.1.6 Add Stimuli Image





The screenshot displays a list of stimuli images within a software interface. The list consists of seven items, each with a small image, a text label, and a 'Delete' button. The items are:

- Image: Orange slice; Label: Fruit; Button: Delete
- Image: Nerds candy box; Label: Candy; Button: Delete
- Image: Two pears; Label: Fruit; Button: Delete
- Image: Green apple; Label: Fruit; Button: Delete
- Image: Strawberry; Label: Fruit; Button: Delete
- Image: Skittles candy box; Label: Candy; Button: Delete
- Image: Two chocolate-covered candies; Label: Candy; Button: Delete

At the bottom center of the interface is a 'Finish' button. The entire interface is framed by blue vertical bars on the left and right, and a purple horizontal bar at the bottom.



### 3.1.7 Add Stimuli Mixed

		
	Fruit	Delete
	Candy	Delete
	Candy	Delete
charity	Good	Delete
happy	Good	Delete
acceptance	Good	Delete
weekend	Good	Delete
smile	Good	Delete
poison	Bad	Delete
anger	Bad	Delete
rejection	Bad	Delete
failure	Bad	Delete
sad	Bad	Delete


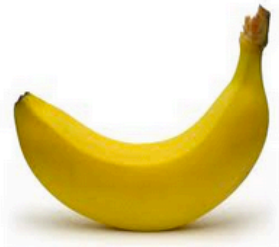


### 3.1.8 Take IAT Incorrect

Implicit Association Test  
**Take IAT**

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Subconscious Analysis Software  
**enigma elucidation**  
Fabricating IAT Luminating Existing Thinking  
**FSH Technologies**

Candy or Good Bad or Fruit



Keep fingers on e and i keys. If a red X appears, you've incorrectly categorized and you must press the opposite key to move onto next question.

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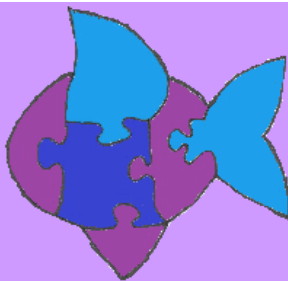
Add Stimuli										
Pass/Fail Status	Test Number	Description	Action to perform test (pass)	Steps to be Executed	State Before Test	Expected Results	Observed Results	Comments	Tested By	Date Tested
P	5.001	Radio Button Stimuli Type	Toggle both Stimuli type values for Radio Button	Click one button, then click the other.	Radio Button set to default (word), nothing inputted	The word button activates empty text box and deactivates image browse button. The image button activates browse button and deactivates the text box.	Matches the Expected Results Exactly		Nathan Levine	4/22/12
P	5.002	Uploading stimuli image	Input an appropriate root and extension to image	Browse for image, Click Add Stimuli	Stimuli field with valid input	Stimuli added to stimuli table	Stimuli is added to the table, you can see it in the listing		Nathan Levine	4/22/12
P	5.003	Uploading stimuli text	Input text	Type in word into stimuli field, Click Add Stimuli	Stimuli field with valid input	Stimuli added to stimuli table	Stimuli is added to the table, you can see it in the listing		Nathan Levine	4/22/12
P	5.004	Input invalid link to image	Input an invalid root or extension to image	Browse for image, Click Add Stimuli	Stimuli field with invalid input	Output "Can not upload image, try again!"	You can upload word docs as pictures		Nathan Levine	4/22/12
P	5.005	Do not select a category type	Do not select a radio button	Click Add Stimuli	No Selected Radio Button	Output "Please select a category"	Proper message prints to screen		Nathan Levine	4/22/12
P	5.005	Add Stimuli	Input valid stimuli and chose 1 category	Click Add Stimuli	Stimuli field with valid input and category selected	Stimuli added to stimuli table	Stimuli is added to the table, you can see it in the listing.		Nathan Levine	4/22/12
P	5.007	Check Image Size	Select image that is too big	Click Add Stimuli	Stimuli is not added	Scales down the image to an acceptable size	Scales down the image to an acceptable size	The original plan was to print a warning, and then we changed the functionality.	Nathan Levine	4/22/12
P	5.008	Check Image Type	Select image that is not in correct format	Click Add Stimuli	Stimuli is not added	Output "Image is not in correct format"	Allows you to add anything as an image		Nathan Levine	4/22/12
<b>P on Unit Summary</b> <b>F on Unit Summary</b>										
						<b>8 passed</b>	<b>2 failed</b>			
						<b>70% Passing</b>				
						<b>Date of test =</b>	<b>4/22/12</b>			

### 3.1.9 Take IAT Incorrect





Implicit Association Test  
Take IAT



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Fabricating IAT Luminating Existing Thinking  
**FSH Technologies**

Fruit

Candy



Keep fingers on e and i keys. If a red X appears, you've incorrectly categorized and you must press the opposite key to move onto next question.

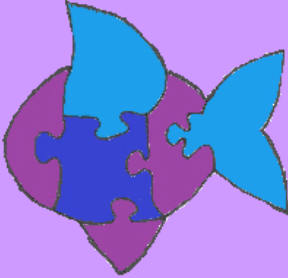
**enigma elucidation** Subconscious Analysis Software



### 3.1.10 Take IAT Directions

**Implicit Association Test**  
**Take IAT**

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Subconscious Analysis Software  
**enigma elucidation**  
Fabricating IAT Luminating Existing Thinking  
**FSH Technologies**



Fruit or Good Bad or Candy

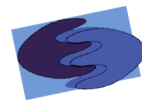
Notice the four categories are now back, only the top two categories are on the same side that they were in the previous section.  
Press the space bar to continue.

Keep fingers on e and i keys. If a red X appears, you've incorrectly categorized and you must press the opposite key to move onto next question.

enigma elucidation Subconscious Analysis Software

## 3.2 Logical Data Dictionary

enigma elucidation	
Project SAS	
Data Dictionary	
This data dictionary is used to record all data entities used and recorded in SAS' software.	
Key:	
Table	Name of the table data is stored in
Data Name	Name of the data that is being stored in the database
Applied Process(es)	Processes in which the data is involved
MySQL Data Type	The type of the inputted data
Data Size	The acceptable size of data
Description	Brief description of the data



Acceptable Input Characters	Valid characters that can be accepted by the system
Unacceptable Input	An example of data that will not be accepted by the system
Notes	Any other important information about the data

enigma

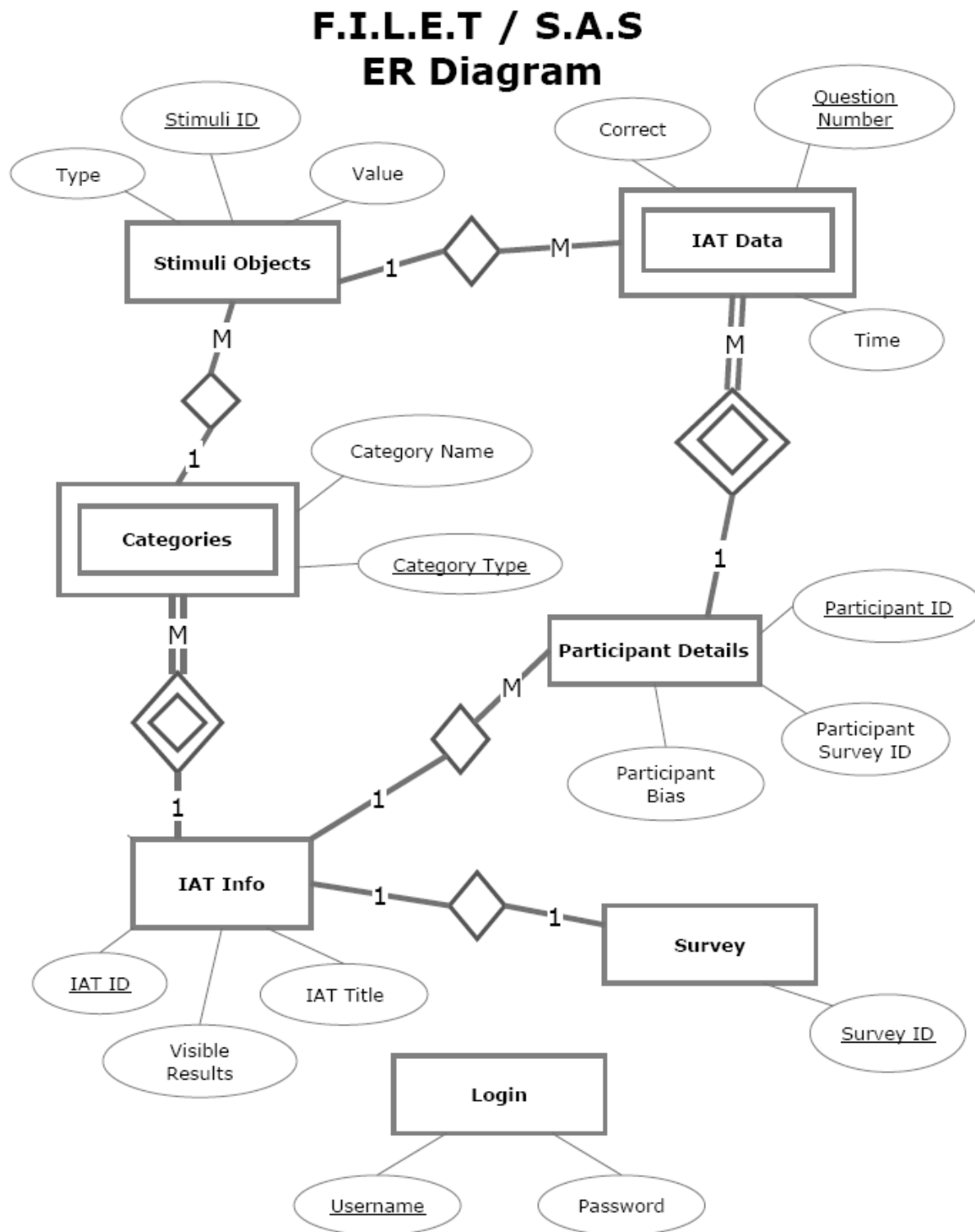
**enigma elucidation**  
Data Dictionary

L = Login; C = Create IAT; V = View Results; T = Take IAT; E = Export Results

Category	Data Name	Applied Process(es)	MySQL Data Type	Data Size	Description	Acceptable Input Character	Acceptable Range of Input	Unacceptable Input	Notes
Categories	Category Name	C, V, T, E	varchar	1-50 Characters	Name given to the different categories		A-Z, a-z, 0-9	" "	
Stimuli Objects	Category Type	C, V, T, E	varchar	1-50 Characters	Distinguishes the category type that the stimuli falls under	P1, O1, P2, O2	A-Z, a-z, 0-9	null	
Data	Question Number	V, T, E	int	1-3 Digits	Question number in IAT	numbers 1-200	0-9	first	
Data	Time	V, T, E	time	1-10 Digits	Time (ms) it took participant to answer questions		0-9	flag	
Data	Correct	V, T, E	int	1 Digit	if the participant got the question right or wrong		0-1	" "	
Stimuli Objects	Stimuli ID	C, V, T, E	int	1-2 Digits	Unique ID for Stimuli Object		0-9	computer	
Info	IAT Title	C, V, T, E	varchar	1-50 Characters	Title of IAT		A-Z, a-z, 0-9	IAT	
Info	Visible Results	C, V, T	int	1 Digit	States whether or not participant can view their IAT result		0-1	yes	
Participant Categories, Stimuli Objects	IAT ID	C, V, T, E	int	1-3 Digits	Unique ID for IAT		0-9	THE IAT	
to, Survey	Survey URL/ID	C, V, T, E	varchar	1-200 Characters	Reference to the survey being used for the IAT		A-Z, a-z, 0-9, /, :	...	
login	username	L	varchar	1-20 Characters	Username		A-Z, a-z, 0-9	(%*#@!	only necessary for administrator
login	password	L	varchar	1-20 Characters	Password		A-Z, a-z, 0-9, !, @, #, \$, %, ^, &, *, (, )	null	only necessary for administrator
Participant Details	Participant Bias	V, T, E	decimal	1-15 Digits	calculated bias score	decimal on or between ranges (-1) - 1	0-9	7	
Participant Details, IAT Data	Participant ID	V, T, E	int	1-9 Digits	ID of participant		0-9	q	
Participant Details, Survey	Participant Survey ID	V, T, E	int	1-9 Digits	Survey ID of participant		0-9	" "	
Stimuli Objects	Type	C, V, T, E	varchar	1-20 Characters	States what type of stimuli is stored: a text or a file path to an image		A-Z, a-z	2563	
Stimuli Objects	Value	C, V, T, E	varchar	1-100 Characters	Contains either the word stimuli or the file path to the image		A-Z, a-z, 0-9, /	null	



### 3.3 Entity-Relationship Diagram





## 4 Architectural Design Specifications

### 4.1 Development and Production Environment

For the development of SAS, enigma elucidation used the Windows and Macintosh computers provided by Siena College in the Software Engineering lab located on the 3rd floor of Roger Bacon room 348.

#### Server:

Operating System:	CentOS (Linux) Release 5.2(Final)
Server Name:	sienasellbacks.com
CPU Type:	Intel Xeon X86_64 2.66 GHz
Web Server:	Apache version 2.2.9
Programming Language:	PHP version 5.2.6
Database:	MySQL version 5.0.45

#### Windows Computer:

Operating System:	Windows Vista Enterprise (6.0, Build 6002)
Model:	Dell OptiPlex 760
Processor:	Intel Core 2 Duo
Speed:	2.93 GHz
Memory:	4 GB
Available Software:	
	<ul style="list-style-type: none"><li>• Mozilla Firefox</li><li>• Google Chrome</li><li>• Internet Explorer</li><li>• FileZilla</li><li>• Notepad++</li><li>• Microsoft Office</li></ul>



## Macintosh Computer:

Operating System:	Mac OS X 10.6.4
Model:	iMac 5,1
Processor:	Intel Core 2 Duo
Speed:	2 GHz
Memory:	1 GB
Available Software:	
	<ul style="list-style-type: none"><li>• Safari</li></ul>

## 4.2 Deliverables

All of the deliverables related to project SAS will either be hosted on the team website or will be delivered on a DVD. enigma elucidation will put the following documents on the team website:

- Acceptance Test Document
- Test Result Document
- Link to prototype demonstration
- Team Resumes

The DVD will contain:

- Test Plan & Test Results
- A copy of the Acceptance Test PowerPoint Presentation
- A copy of the completed team files from your team directory, including all website files. The lyrics to the team song, a copy of a sound/music file for the team song and a video recording of the team song.
- There is a README.TXT file that explains the organization of the files on the DVD.
- Team Leader evaluations of each member of the team
- Team Leader attendance sheets.
- Team member evaluation sheet of all members of the team
- Team member logs
- Team member resumes
- Course Legacies



## 5 Glossary of Terms

**Acceptance Test-** This test checks to make sure that Project SAS meets all of the functional and nonfunctional requirements as set forth by the corresponding Requirements Specification to the approval of our client.

**AJAX (Asynchronous JavaScript and XML) -** is a free group of interrelated web development methods used for quickly creating efficient and interactive Web applications.

**Apache** – an open source HTTP (hypertext transfer protocol) Server that hosts many of the Internet’s websites.

**Chrome** -Web browser designed by Google

**CSS (Cascading Style Sheets)** – A style sheet language used to style webpages written in HTML and XHTML

**Data Flow Diagram (DFD)** – a graphical representation of the flow of data through a software system

**Database** – An organized collection of data designed for efficient and quick retrieval and storing of data.

**Firefox** - Internet browser designed by Mozilla

**Functional Requirements Inventory** – Defines what the system will be able to do that is testable

**Gantt Chart** – Gantt charts illustrate a project schedule specifying the start and finish dates of the terminal elements and summary elements of a project

**HTML (HyperText Markup Language)** – language for creating web pages

**IAT (Implicit Association Test)** – a psychology test that determines a participant’s bias based on how a person categorizes stimuli and how fast they categorize it

**Integration Test-**This test checks to make sure that all of the software components work together as a whole. Unit tests do not check for compatibility issues between components. This test not only tests compatibility, but it also checks for dependency issues, interface issues, and database, survey engine and interface interaction.

**Internet Explorer (IE)-** Internet browser designed by Microsoft

**JavaScript** – a free scripting language that works on all major browsers usually embedded directly into HTML pages to add interactivity

**MySQL** – a open source relational database management system

**Non-Functional Requirements Inventory** - defines what the system will be that is not testable.

**PHP (PHP Hypertext Preprocessor)** – server side HTML scripting language

**Prototype** – A rudimentary depiction of the design of the final product

**Safari** – Web browser designed by Apple

**SAS** – Subconscious Analysis Software, enigma elucidation the software system.

**System Test-** This test is concerned with making sure that Project SAS as a whole meets all of the functional requirements necessary to perform adequately as a system.

**Test Case-** Tests the project SAS against the individual actions taken by our client during runtime. These are pass or fail tests.

**UML (Unified Modeling Language)** – a specification language used in software engineering

**UML Use Case Diagram** – a behavioral diagram used to identify the requirements of a system



**Unit Test-** Focuses on testing the individual software components. These unit tests are usually performed by one person to make sure that each component is performing correctly and efficiently. These tests include logic based testing, random testing, syntax testing, etc.

**XHTML (eXtensible HyperText Markup Language)** – a stricter and cleaner version of HTML (HyperText Markup Language)

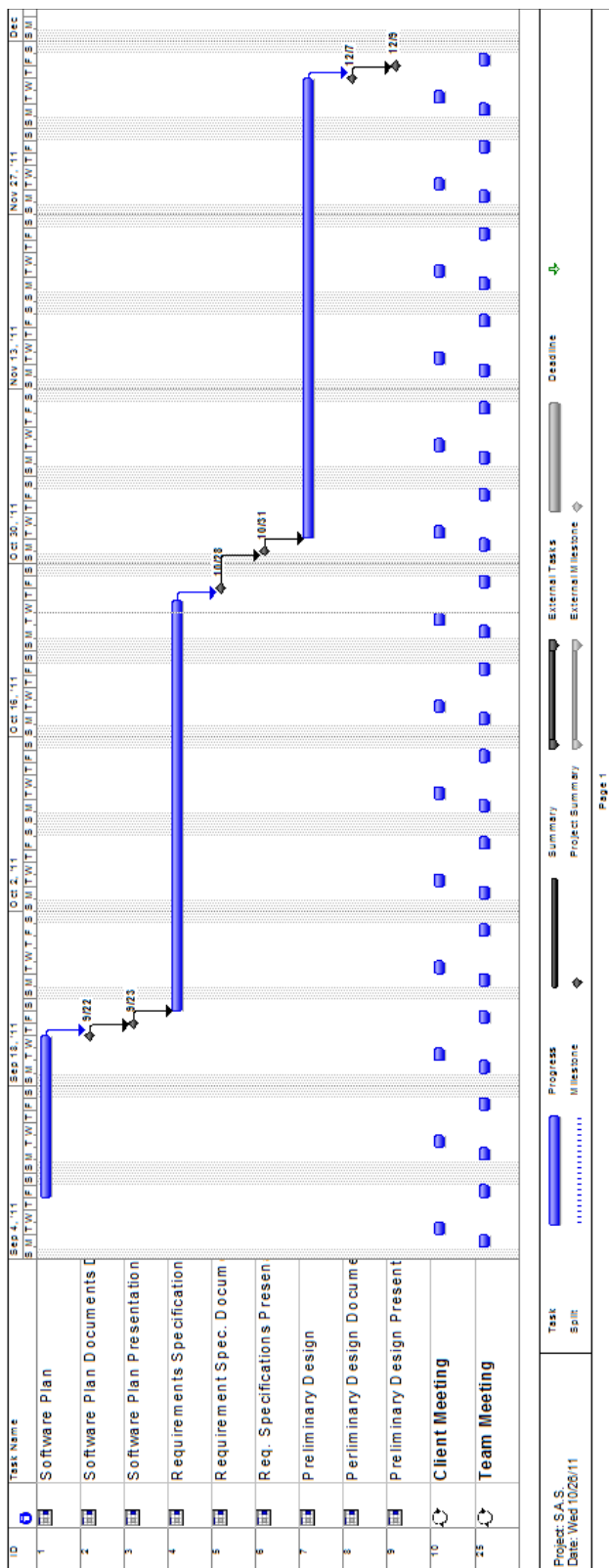
**XML (Extensible Markup Language)** - A markup language designed to store and transport data; different from HTML which is designed to display data.





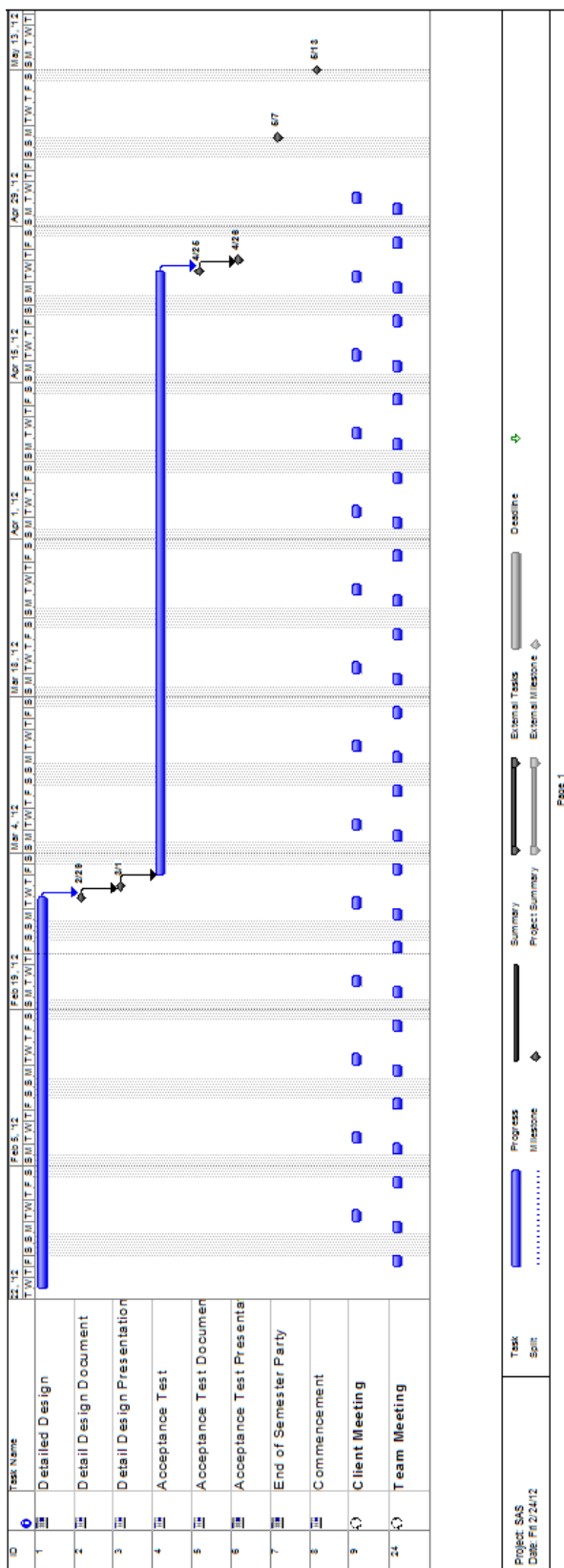
# Timeline

## 6.1 Fall 2011





## 6.2 Spring 2012





## **Appendices**

**Appendix A: Test Plan**

**Appendix B: Data Flow Diagrams**