



PES UNIVERSITY, BANGALORE

Department of Computer Science and Engineering

Software Requirements Specification for

Survey Software

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

Introduction

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Surveys provide a means of measuring a population's characteristics, self-reported and observed behaviours, awareness of programs, attitudes or opinions, and needs (Sekaran, 1992). (Hair et al., 2006) adds that it is an ideal mechanism to gather and analyse large amounts of direct feedback about someone's members, prospects, and employees. In support of gathering a big amount of data, computer technology may be a good option to gather a large amount of data. It is commonly experienced that surveys are distributed through email services. Also, there are Web-based systems developed for administering survey practices.

A web-based survey is the collection of data through a self-administered electronic set of questions on the Web (Thomas, 2003). Web-based surveys can conduct large-scale data collection. Web-based survey management system encompasses how organizations organize, run and manage various types of surveys through internet networks. It lets the user not only build questionnaires but also publish questionnaires to the respondents. This technology provides an inexpensive mechanism for conducting surveys online instead of through traditional survey methods. Also, it speeds up the distribution and response cycles. Web-based surveys are expected to be popularly used.

However, it is observable that most people or organizations manage their survey using the traditional method by distributing their survey through the mail or by telephoning, and some may afford to self-distribute by hand (Ariffin & Norshuhada, 2008; Zulikha & Ariffin, 2005; Tronstad, Phillips, Garcia, & Harlow, 2009). In the current age, where digital is the theme, this is not a timely solution for gathering information because it does not have fast circular returning and responses from the respondents. Other issues such as cost, time, and effectiveness are also within consideration.

Therefore, a conceptual model of a web-based survey management system is required to be the solution for these issues. This initiative is proposed to solve problems as described in the next section

Purpose

There are three main reasons why businesses and researchers should prefer surveying their product

- Discover the answers:

Building the right products for the right people is very censorious for the success of any organization. So basically a survey gives the organization in-depth knowledge about the user perception of the product. This very intense knowledge leaves an opportunity for organizations to plan new products, grow businesses, and exceed this competitive marketplace. So generally the questions in these surveys should be strategically planned and structured in such a way that the most accurate responses are received.

- Base decisions on the information obtained:

Sometimes organizations need assurance that their product is being headed in the right direction. So a survey generally helps out the organization to make important decisions during product development to satisfy the user's needs.

- Analyse results:

Comparing results of surveys from time to time allows the surveyor to make a predictive analysis of the survey format and also the improvement statistics.

So a good survey management system plays a productive role in improving the consistency of any organization, business, researcher, or individual in every field starting from design to implementation to maintenance.

Intended audience

This document describes a software system to be developed. It lays out functional and non-functional requirements, and it includes a set of use cases that describe user interactions that the software must provide to the user for perfect interaction.

It establishes the basis for an agreement between customers and contractors or suppliers on how the software product should function (in a market-driven project, these roles may be played by the marketing and development divisions). It is a rigorous assessment of requirements before the more specific system design stages, and its goal is to reduce later redesign. It should also provide a realistic basis for estimating product costs, risks, and schedules. Used appropriately, it may help us prevent software project failure at a later stage.

The document lists sufficient requirements for the project development. To derive the requirements, a developer needs to have a clear and thorough understanding of the products under development. This is achieved through detailed and continuous communications with the project team and customer throughout the software development process.

Product Scope

The software is intended to reach out to users and companies about various categories of products (e.g.- smartphones, clothing, lenses, etc.). It is a means to close the communication gap between users and product companies so that building the right product for the right people is a success from both the organization's and the people's perspectives.

Sometimes organizations need assurance that their product is being headed in the right direction. So a survey generally helps out the organization to make important decisions during product development to satisfy the user's needs.

References

1. Wikipedia
2. Scribd
3. Research Gate
4. Open source platforms

Overall Description

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Product Perspective

There are two methods of using the Internet as survey mechanisms: (1) electronic mail (email) and (2) the World Wide Web (the Web). With e-mail, researchers can send surveys to e-mail addresses as text messages, which the recipient can then read, save, respond to, or throw away, much like a paper survey. Surveys can also be posted on the Web and may include text, pictures, and forms to be filled in by the respondent. The primary difference between these two response modes is that e-mail is a “push” technology while the Web is a “pull” technology. That is, with e-mail, the sent messages are automatically received in the potential respondent's mailbox, whereas respondents must be attracted in some way to a Webpage.

In short, a web-based survey is a survey conducted by a researcher or the public through the internet. They can create their online questionnaire and distribute it through the Internet. On the other hand, a web-based survey management system is a system that can manage the survey through the internet. In this study, a database will be integrated to store data. When respondents answer the survey at any time, data will be stored in the database. At the end of the data collection period, researchers can retrieve the responses to analyse.

There are platforms available in the same product family like Google Forms, YouGov, etc. This software is going to be an extension of the features like survey creation and management of responses provided by those where the analytics part has been integrated and an admin-user part defined so that there is a company-user interaction. Also, the several catalogues of surveys will be defined for users to get surveys based on their knowledge and also be able to view analytics based on the product they catalogue looking for. Also, the reward coins will make it even more beneficial for each user giving the survey to get something back for the catalogue to spend on the survey. The scoring mechanism will be useful in scoring the coins and also adding the survey responses to the analytics which will get refreshed after each response.

Product Functions

Apart from the register/login interfaces issued to the client, the software can be divided into 4 major components:

Stage One: Survey Creation

- Building survey catalogue types.
- Defining survey content.
- Choosing web surveys.
- Selection of the survey population.

Stage Two: Designing the Web-based survey.

- Questionnaire design.
- Choosing survey type and format. (For e.g.: entertainment based, fashion-based, etc.)
- Turning a survey questionnaire entertainment-based survey:

Stage Three: Administering a Web-based survey

- Administering a web survey: technical issues.
- Pre-testing.
- Privacy issues.
- Survey incentives.
- Synchronization for the duration of survey.
- Output of survey data.

Stage Four: Reporting data to analytics backend

- Concatenation of responses
- Calculation of Reward points
- Creation of analytics charts

User Classes and Characteristics

The system will support two types of user privileges:

- Admin
- User

Admin- They will have privileges to create their own surveys based on any on of the catalogue of products. Adding questionnaires and having access to the analytics of that survey will be a granted access to the admin.

User- They will be able to register through the software and see analytics of various catalogue of products. They will be able to select surveys on their suggested catalogue of interests and submit responses for that specific survey to achieve rewards as coins in return according to the time that the survey requires you to give.

Operating Environment

Any operating system with a web browser installed to support HTML format and multimedia.

Windows 8.1 or above

Preferred Browser : Microsoft Edge, Google Chrome

Linux/Ubuntu (preferred latest version)

Preferred Browser : Firefox

MAC (preferred latest version)

Preferred Browser : Safari

Design and Implementation Constraints

- Making a whole new user-friendly UI to handle surveys easily
- JavaScript frameworks used for development of frontend and backend
- Database support for an enormous amount of data from several surveys
- Performance boost required to lessen the time between two webpages while dealing with enormous database through a request-response(client-server) mechanism
- Multi catalogue support for surveys
- Dealing with an enormous data/Creating model for analytics of responses
- Analytics component will be reused and have to be trusted as reliable
- Multi Lingual support.
- White Label (admin able to configure their own side based on their company's UI)
- Adding suggestive surveys for clients as well as suggestive questionnaires/survey templates for the admin

2.6 Assumptions and Dependencies

Assumptions:

The user is familiar with internet and web based software like social networking sites. The browsers which the user is using is either Google Chrome 10.0 and above or Mozilla Firefox 4.0 and above.

Dependencies:

Response Bias- Whether it's disengagement with the topic at hand, or simply your respondents not wanting to provide honest answers for fears of being judged, or basic response fatigue, you should plan on this being a challenge.

Reward Bias-People often take surveys because they're promised a reward at the end, resulting in them not accurately contributing to your study.

Possible Cooperation Problem-Online surveys could be deleted and ignored. People hate feeling poked and if they get annoyed, they just have to click delete.

External Interface Requirements

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User Interface

- Login page for authenticating registered users. This screen will accept the user id and password to authenticate. It also provides features for "New user registration" for new users and "Forgot password" and "Forgot user id" for existing users.
- Users will be able to choose the domain/topic for which they want to give the survey.
- Information like the User's name, e-mail id, phone number, and address would be asked for all future communication purposes.
- Users will be able to answer the question asked to them either in MCQ form or Subjective Form, entirely based on the type of question.
- Progress would be saved every 2 mins in the backend database servers so that in case of poor network connectivity or unwanted system shutdown, users can retrieve the data where they left off.
- Submit button will be provided to submit all the answers given by the users which will be stored in the databases for future evaluation.
- On the basis of the evaluation, users may receive various goodies and hampers.

Hardware Interface

There is no direct hardware interface specifically for Survey Software. The web application runs on an application server hosted in-house on enterprise hardware.

Software Interface

- Information database to store user details. Possible DBMS used would be MySQL, Amazon RDS, and Oracle RDBMS.
- Inventory ERP to get the prize availability information and to track whether the user has received his/her prize or not.

Communications Interfaces

Communication standards and Network server communications protocols:

HTTP/HTTPS protocol will be used to communicate through the Web Interface with the database.

HTTP is a classic "client-server" protocol. Users click a link on their web browser or go to another page in the browser (the client), and the browser sends a request over the internet to a web server that houses the site the user requested. The server sends back the content of the site, such as text and images, which display in users' web browsers. HTTP is an unsecure communications protocol because the data it sends back and forth between a browser and a server is unencrypted and can be intercepted by third parties.

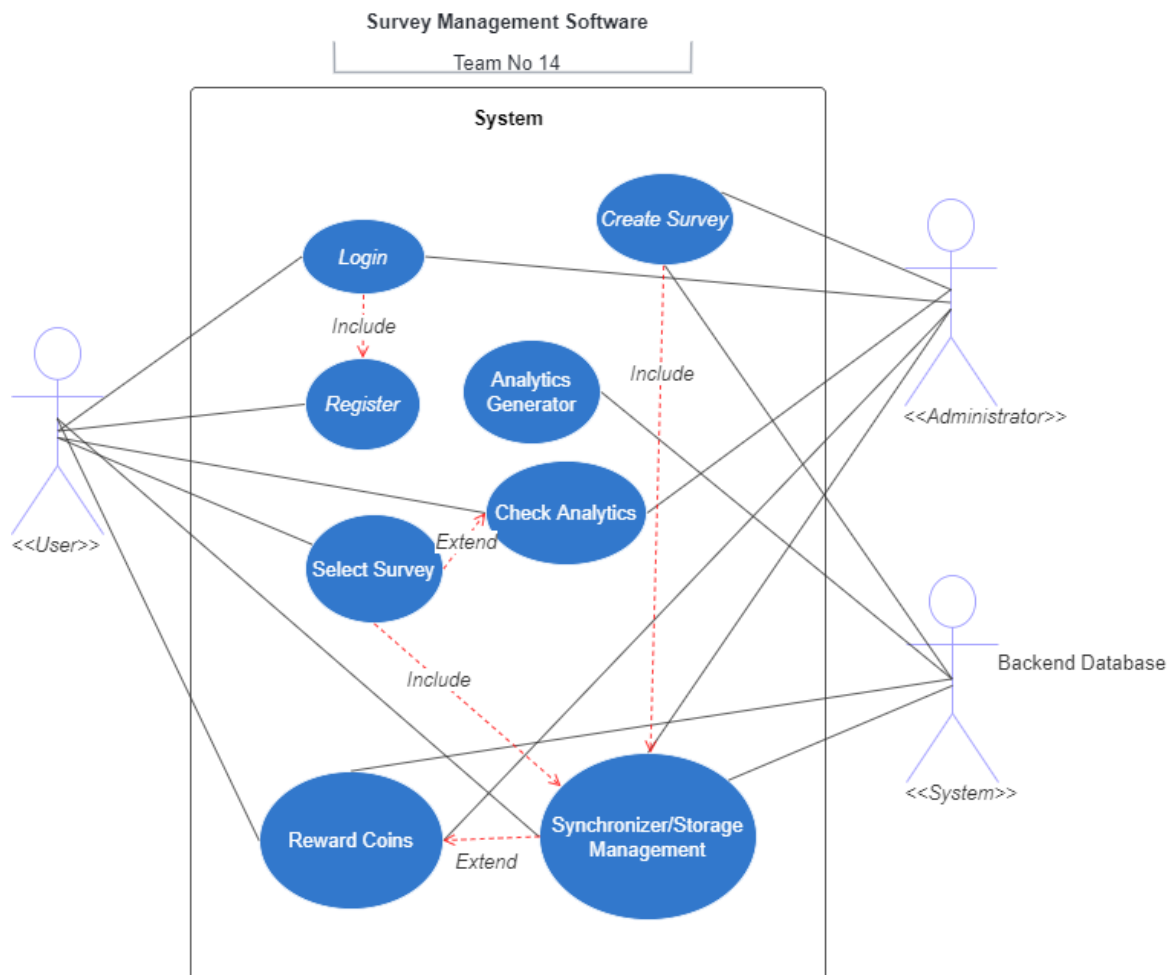
HTTPS is similar to HTTP, but different in that it combines with a security protocol called SSL/TLS to provide secure client-server communications over unsecure networks such as the internet. You're most likely to see HTTPS protocols on ecommerce websites that ask for personal financial information like credit card numbers. You know a website is using HTTPS protocols when you see the "https://" in the web address displayed in your browser's Address field.

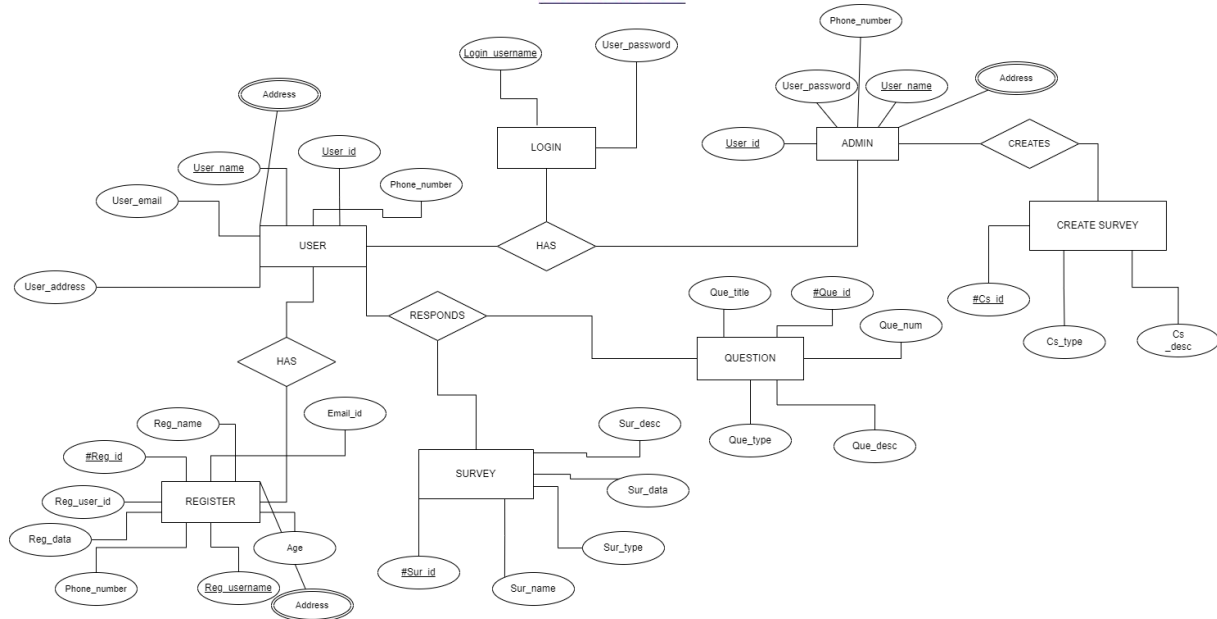
Any change while working with the site will be changed in the backend/synchronized with the backend by adding the new content to the virtual DOM of the browser so as to communicate with the backend to automate save process.

There will be an SMTP/API protocol to send e-mail to users if they have a new survey available through a third-party cloud service.

Analysis Models

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System Features

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Survey software is being developed in generic. it supports gathering a big amount of data and helps to analyse the gathered data. The following are the system features/functional requirements (1 – being top priority and 11 – being least priority):

1. Survey builder:

Typical survey builders use a drag-and-drop interface and tools for, among others, layout and design, versioning, question morphing, and preview. The builder creates the front-end look and function of the survey, but it relies on another feature, conditions, to set how the survey behaves. For conditions, you have two perspectives: questions and answers.

2. Questionnaire Design:

Designing a survey requires conditions for both questions and answers. Question conditions may include tools to format style, randomize questions or generate x/y choices. A solution may also feature a timer and allow images and videos for interactive questionnaires. A question library may also be available that lets you archive reusable questions.

3. Answer conditions:

On the answer side, survey software solutions may offer piping or looping dynamics, an option to show/hide questions, or randomize choices. Answers can also be pre-set with conditional triggers that

personalize the survey. A good solution may provide custom scripting that lets you create specific unique process flows and behaviour.

4. Multimedia:

A survey software solution may allow the use of images, videos, and graphics for interactive questionnaires. This functionality can be built-in or as an integrated feature with another app.

5. Response management:

Data collection can be set in many ways, for example, applying a quota to manage the number of responses, automatically categorizing responses, and triggering succeeding actions. The feature also allows for tracking multiple iterations and collecting feedback in real-time.

6. Scoring:

Whatever answer-question conditions are used, the survey software has a scoring algorithm set either as default or based on rules. Scoring and tallying are automated, which speeds up the process of aggregating feedback and generating insights.

7. Data analytics:

Standard analytics show basic summaries of responses, while more advanced solutions may perform cross-tabulation, filtering, weighting, and other multivariate statistical methods to create charts so as to communicate information in a graphical format.

8. Survey templates:

Most solutions provide templates to help kick-start your survey. Templates often accommodate standard questionnaires like leading questions, dichotomous questions, bipolar questions, and rating scale types. Polls and forms are also common templates, while some solutions also offer mobile themes.

9. Email invitation:

A survey solution may include a mailer to send an invite to the questionnaire or it integrates with a third-party app to accomplish this task. A mailer usually includes test responses, which help you fine-tune the questions.

10. White label(TBD):

A survey software solution may let you configure the interface with your brand logo and colors to give your surveys a more professional and appealing look.

11. Multilingual support (TBD):

You'll find solutions that host different languages, which is useful for conducting surveys in different global market territories. The feature may include a spell-checker for each language and an auto-detect or opt-in tool that set the questionnaire to the default language of the respondent.

Other Non-functional Requirements

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Performance Requirements

- System performance is the most important quality in non-functional requirements and affects almost all the other preceding ones.
- Furthermore, reliability, availability, and maintainability (RAM) features fall exclusively under these requirements.
- System performance defines how fast a system can respond to a particular user's action under a certain workload.
- Reliability: Reliability is the probability and percentage of the software performing without failure for a specific number of uses or amount of time.
- Availability: This feature defines the amount of time the system is running, the time it takes to repair a fault, and the time between lapses.
- Maintainability: This feature indicates the average time and ease and rapidity with which a system can be restored after a failure.

Safety Requirements

Only Admin can see information of user who participated in their created survey and gave a full response to it.

Security Requirements

- Security measures ensure your software's safety against espionage or sabotage.
- These features are necessary even for stand-alone systems; you don't want anyone to have access to your sensitive data.

Attributes

- **Recoverability**

Recoverability is the ability to recover from a crash or a failure in the system and return to full operations.

- **Serviceability**

This feature indicates how easy it is to perform service when necessary.

- **Manageability**

This feature is defined as the ability to control a system efficiently and keep it fully operational.

- **Environmental**

These factors concern the software's environment.

Will the system need to operate 24/7? What are the external factors that might affect it? (like snow, rain, and humidity.)

Other Requirements

- **Capacity**

This feature indicates your system's storage capacity, which is dependent on its type and characteristics.

- **Data integrity**

Data integrity refers to maintaining and assuring data accuracy and consistency over its entire lifecycle.

If this factor is corrupted, data is lost due to a database error.

- **Interoperability**

All system components must follow a common and standard set of exchange formats to exchange data; the lack of interoperability happens when people do not follow standards.

- **Usability**

This feature concerns the users; it indicates how effectively they can learn and use a system.

Appendix A: Glossary

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1	Administrator	Administrators support the smooth running of offices by carrying out clerical tasks and projects. As an administrator in the construction industry, you could be organising project meetings.
2	Employer	Employer is an individual who has contacted the event organiser.
3	HTTPS	HTTPS stands for Hypertext Transfer Protocol Secure. This protocol is a widely used communications protocol for secure communication over a computer network, with especially wide deployment on the Internet.
4	RAM	Administrators support the smooth running of offices by carrying out clerical tasks and projects. As an administrator in the construction industry, you could be organising project meetings.
5	SRS	SRS stands for Software Requirement Specification. It is his used to refer to a document that completely describes all of the functions of a proposed system and the constraints under which it must operate.
6	UI	UI stands for User Interface. It is defined as the space where interaction between humans and machines occurs.
7	View	View means to display and look at data on screen.

Appendix B: Field Layouts

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An Excel sheet containing field layouts and properties/attributes and report requirements.

Sample sheet with the information required to register the customer

Field	Length	Data Type	Description	Mandatory
First name	20	String		Y
Last name	20	String		Y
Middle name	20	String		N
email id	30	Alphanumeric	Enter private mail id.	Y
Alternate email id	30	Alphanumeric	Enter alternate mail id.	N
Phone no.	10	integer	Enter valid phone no.	Y
Alternate phone no.	10	integer	Enter alternate phone no.	N
Address	100	String	Enter permanent matrix.	Y
DOB	10	date		Y
Interests	NA	String	Enter field of interest.	N

Remarks

Appendix C: Requirement Traceability Matrix

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Sl. No	Requirement ID	Brief Description of Requirement	Architecture Reference	Design Reference	Code Reference	File Reference	Test Case ID	System Test Case ID
1	Survey_builder	The builder creates the front-end look and function of the survey, but it relies on another feature, conditions, to set how the survey behaves.						
2	Questionnaire_design	The process of responding to questions, challenges, and options for asking questions about behavioural frequencies, practical techniques for evaluating questions, mode specific questionnaire characteristics, and review methods of standardized and conversational interviewing.						
3	Answer_conditions	survey software solutions may offer piping or looping dynamics, an option to show/hide questions, or randomize choices. Answers can also be pre-set with conditional triggers that personalize the survey. A good solution may provide custom scripting that lets you create specific unique process flows and behaviour.						
4	Multimedia	A survey software solution may allow the use of images, videos, and graphics for interactive questionnaires.						
5	Response_management	This feature allows for tracking multiple iterations and collecting feedback in real-time.						
6	Scoring	A scored survey is a questionnaire in which you assign points or scores to answer options.						
7	Data_analytics	Survey analysis is the process of analyzing customer insights.						
8	Survey_templates	Templates often accommodate standard						

		questionnaires like leading questions, dichotomous questions, bipolar questions, and rating scale types.					
9	Email_invitation	E-mail is a common invitation mode for Web surveys. This invitation mode is cheap, is easy to automate and personalize, and provides easy access to the survey (a clickable URL).					
10	White_label (TBD)	A survey software solution may let you configure the interface with your brand logo and colors to give your surveys a more professional and appealing look.					
11	Multilingual_support (TBD)	A multilingual survey, allows respondents to answer survey questions in their preferred language.					