Agile Software Development: Positive and Negative User Stories

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Abstract— **User stories play an important role in extreme programming. Extreme programming is one of the popular processes from agile software development. Agile software development is an emerging method of software development, as compared to traditional approach. The success of software development is based on user stories satisfaction. As requirement engineering is the first phase in software development approach, user stories are written from customer requirements. This paper discusses about writing user stories by different ways which it may be treated positively or negatively and how it impact on requirement verification. User stories examples written in this paper are through experience gained from attendance monitoring project. In this paper first we have given brief idea about user stories with examples, and then we have described positive and negative user stories followed by conclusion and future work.**

Keywords— ***software development life cycle; agile; user stories; requirement engineering; extreme programming***

I. INTRODUCTION

Agile software development is following incremental and iterative approach. As customer waiting time is reduced in this approach, it is becoming more popular now days. Agile process starts by writing user stories. User stories are short and simple statements formed through customer requirements. These are written on cards or sticky notes and generally are hand written. These are pinned on walls or tables and used during planning and discussion. All user stories are prioritized. User stories are written in the form [6] of *As a <type of user> I want to <some goal> so that <some action>*. When we are documenting requirements in the form of user stories, generally we frame it by positive way.

Following is an example of user stories designed for attendance monitoring project.

As an administrator I want to login so that I can use application.

This user story is written to cover large functionality, as application may contain various options. Such User stories are called as epic. Epic is divided into smaller user stories so that functionality is properly covered. Following are two examples of smaller user stories.

As an administrator I want to assign subjects to faculties so that they can enter the attendance

As a class teacher I want to generate cumulative defaulter list for my class so that I can take corrective actions

II. BACKGROUND AND RELATED WORK

Pankaj Kamthan and Nazlie Shahmir described user story model. As per user story model [2] user statement is structured of role model, goal and value. Then they describe negative user story model. Basically when you represent any goal or value negative with negative role model, it becomes negative user story model.

Pankaj Kamthan and Nazlie Shahmir [1] again described positive user stories and negative user stories. They have explained challenges and cost associated with negative user story.

Garm Lucassen, Fabiano Dalpiaz, Jan Martijn E.M. van der Werf and Sjaak Brinkkemper [4] described user story quality meaning and its framework. They have also described user story conceptual model along with 14 quality criteria for user stories.

Michael J Rees author developed software tool [3] for user story creation called DotStories. This tool is replacement of regular index cards or handwritten user stories. Here data is stored in separate xml file.

As per Charles Bradley, Certified ScrumMaster[5]; user story is neither a sentence nor an index card but it should reflect flavor of acceptance testing.

III. USER STORY

A. Basics:

As we have seen already, user stories are written for customer requirements. Developers are using it during discussion and planning, to fulfil requirements. Following are prioritized and sorted user stories for attendance monitoring project.

Fig. 1. Typical User Story

TABLE I: User Stories

Sr. No.	User Stories
1	As an administrator I want to login so that I can use application securely
2	As an administrator I want to create faculty login so that record of faculty is present in system
3	As an administrator I want to assign subjects to faculties so that they can enter the attendance
4	As a Subject teacher I want to login so that I can use application securely
5	As an administrator I want to enter students details so that I have a record of all the present students
6	As an administrator I want to create a class so that I can assign students to that class.
7	As a Subject teacher I want to enter the daily attendance for my subject so that attendance record for each lecture can be maintained
8	As a subject teacher I want to generate weekly defaulter list for my subject so that I can take corrective actions
9	As an administrator I want to generate weekly defaulter list for all class so that I can take corrective actions
10	As a class teacher I want to generate weekly defaulter list for my class so that I can take corrective actions
11	As a subject teacher I want to generate monthly defaulter list for my subject so that I can take corrective actions
12	As an administrator I want to generate monthly defaulter list for all class so that I can take corrective actions
13	As a class teacher I want to generate monthly defaulter list for my class so that I can take corrective actions
14	As a subject teacher I want to generate cumulative defaulter list for my subject so that I can take corrective actions
15	As an administrator I want to generate cumulative defaulter list for all class so that I can take corrective actions
16	As a class teacher I want to generate cumulative defaulter list for my class so that I can take corrective actions
17	As a subject teacher I want to generate defaulter list for students by setting the %age range manually so that I can take corrective actions
18	As an administrator I want to generate defaulter list for students by setting the %age range manually so that I can take corrective actions
19	As a class teacher I want to generate defaulter list for students by setting the %age range manually so that I can take corrective actions
20	As an administrator I want to assign/ reassign students to a class so that I can manage class (in case of YD)
21	As a Subject teacher I want to edit the previous attendance so that I can resolve any absenteeism (if needed)
22	As an administrator I want to edit student details so that I can update any changes that occur
23	As an administrator I want to reset my password so that when I forget password I can regenerate it.

B. Positive User Story:

Above table represents all the user stories designed for attendance monitoring project. Positive user stories [2] are nothing but stories which reflects positive meaning only or acceptance is shown by positive way. If we try to separate out positive user stories from above table, then all stories will be marked as positive. This is because while designing requirements we concentrate only on working expectations from any applications.

Fig. 2. Positive user story model

C. Negative User Story:

Through this paper we want to specify that while designing user stories we should think from negative side also. For example from security point of view, we should design user stories and that need to be tested. Negative user stories are equally important like positive user stories. Below given is typical model for negative user stories. Positive user may

login to system to perform illegal actions or negative user may be unauthorized user like attacker, hacker, and phisher, fraudster accessing system [1] to perform negative actions which may harm or crash the applications.

Fig. 3. Negative user story model

If we want to add negative user stories to above project, following are few examples of the same.

Table II: Negative User Stories

Sr. No.	Negative User Stories
1	As a student I want to login, so that I can edit my attendance
2	As a student I want to login , so that I can edit other student's attendance
3	As a student I want to login, so that I can steal other student information
4	As a unauthorized user I want to login, so that I can delete the information
5	As a student I want to login so that I can change administrator and teacher password

Here it can be observed that we are not taking into consideration other side of application, mostly related to security. Table shows that these user stories are utmost important, for safety of application. Here student may be treated as positive or negative role, because by observing all positive user stories, student role is not defined. Goal is specified as positive (I want to login) and all actions are negative.

IV. CONCLUSION AND FUTURE WORK

Extreme programming is popular today as it focuses on customer satisfaction and it also allow for late changing requirements. Customer satisfaction is only possible when all customer requirements are properly framed, in the form of user stories. As we have seen user stories can be written in the form of positive and negative aspect. While writing stories we pay attention towards positive aspect only, but writing negative user stories is also important, from application security.

To extend this work further, we think of representing user stories with mathematical aspects. Using discrete structure concept like negation on positive user stories and its effect to represent new user story may be treated as negative user story.

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