Task Point System

Kaya Oğuz
kaya.oguz (a) ieu.edu.tr

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Change Log
2017.10.03
OASIS support removed, implemented “change password”, update documentation to reflect the related changes.
2017.09.17
The initial version.

This document is written for the developers who will be using the Task Point System (TPS) for their projects in related courses, such as SE302 and SE315. It describes both the web application and the TPS in detail.

About

Task point system (TPS) is a web application developed to help the students and the lecturer to better execute the team projects. The idea is based on the paper "Implementing large projects in software engineering courses" by David Coppit[1].

TPS is based on the idea of "tasks" that can be created by the developers involved in the project. Every task has a priority point, a difficulty point and a modifier. The modifier is controlled by the lecturer. Other points are set according to the context of the task. The point for the task is computed simply as $(d \times p) + m$.

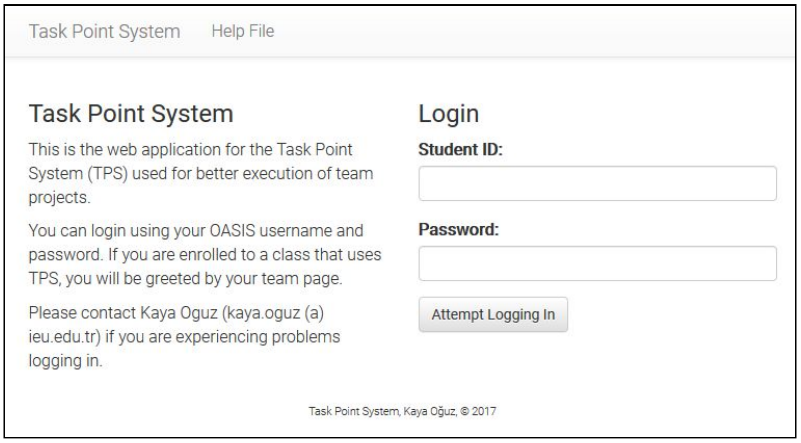
These tasks document the contribution of every developer, which helps the lecturer to keep track of the execution of the project and grade the developers justly at the end of the project.

Usage

The web application greets the developers with a simple login screen as shown below. For the current version, the developers will be given a username and a password by the lecturer. It is possible to change the password.

The students and their teams are defined in the system by the lecturer. If you cannot login make sure you contact your lecturer.

After logging in, the team page greets the user. All of the functions are accessed using this page. It shows the developer name and the team they belong to. The column on the left lists the actions related to the developer, while the column on the right is for the team.



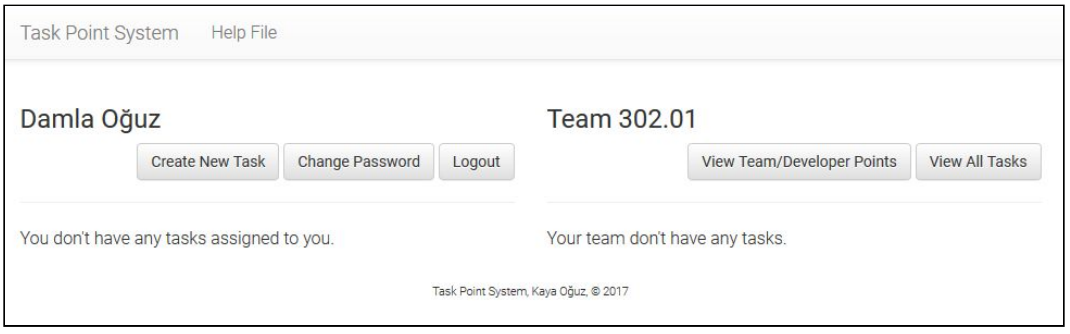
The project assigned to you is made up of milestones. At the end of milestones, you are expected to return a product. For example, a typical milestone is the "Requirements Document". This milestone will have a due date that will be announced during the lectures. Every task you create before that due date will belong to this milestone. Every milestone has a weight associated with it, so if you fail a milestone, you can still work on the next for your

[1] The paper is available at http://www.tandfonline.com/doi/abs/10.1080/08993400600600443 - you can access the file from the university network.

final project grade. So, the project is made up of milestones, and every milestone is completed by the tasks.

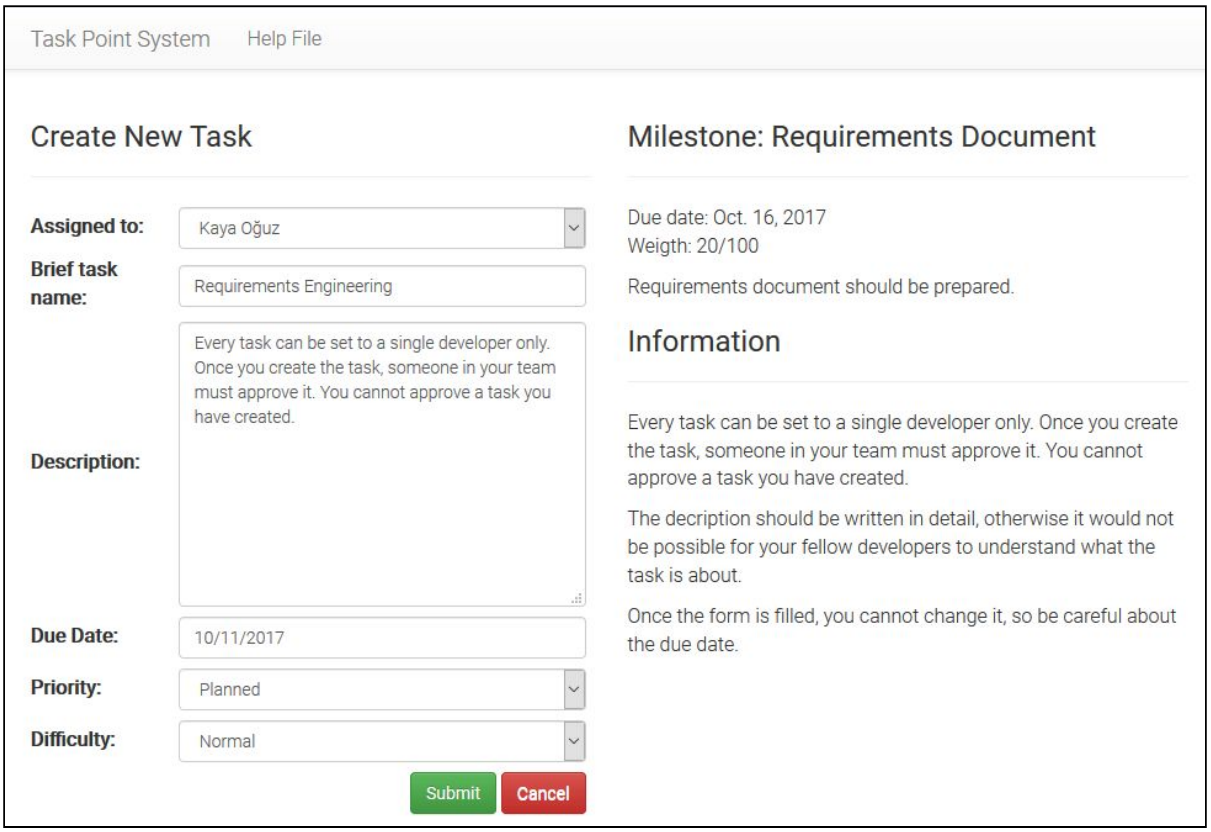
The buttons shown in the screenshot are defined as follows.

- Create New Task: This button takes you to a form where you can define a task that will be assigned to yourself, or a team member.
- Change Password: This button takes you to a form where you can change your password.
- Logout: This button logs you out of the TPS system.
- View Team/Developer Points: This button takes you to a screen where you can view your and your team's progress. Your final project grade is also listed here.
- View All Tasks: This button takes you to a screen where all tasks, either failed or completed can be seen.



The left column of the this main page is reserved for the current user's (Damla, in this screenshot) tasks, while the right column lists the team tasks.

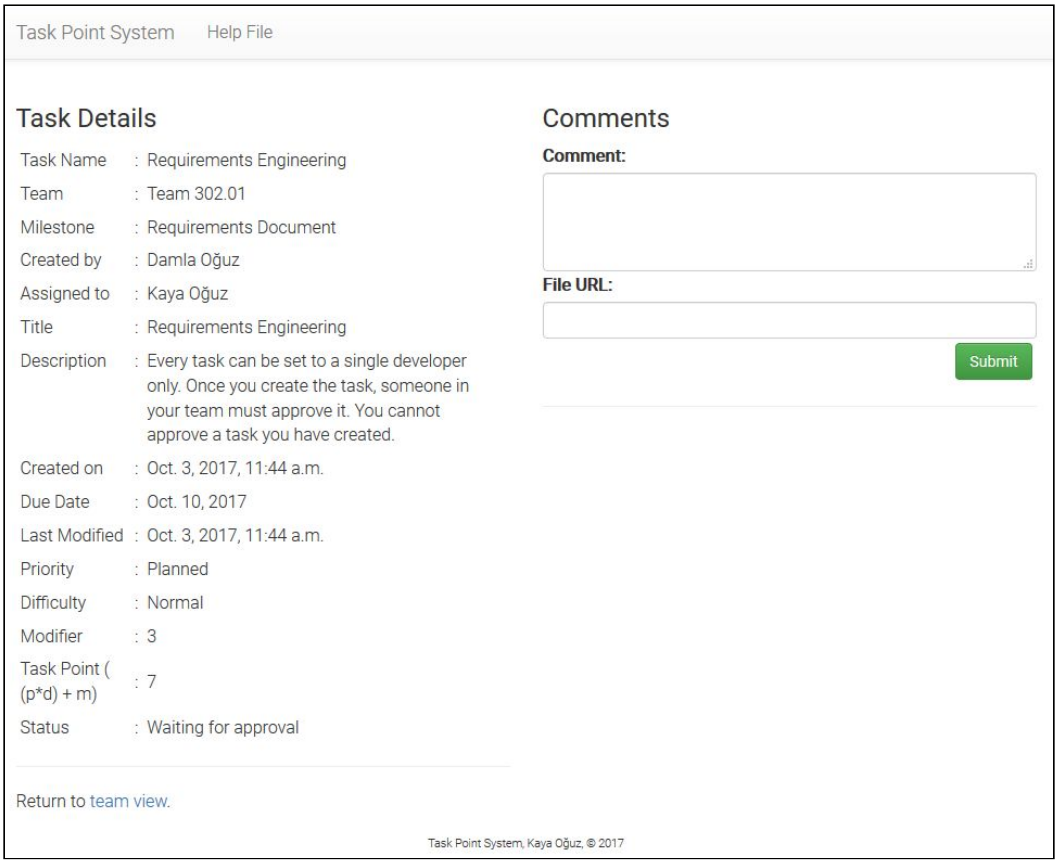
Let’s start with the new task button. Every task can only be assigned to a single developer. Your team members will be listed under the “Assigned to” field. Give it a title and a detailed description. The due date is important because if the task is not completed until then, it is not successful.



The priority has three options: “Urgent”, “Planned”, “Low”. Similarly, Difficulty has three options: “Difficult”, “Normal”, “Easy”. They can be set according to the context and the developer. It should be noted that, high values do not mean higher grades. After you fill in these values, simply hit “Submit” and your data will be validated, for example, the application will check if the due date is not a value from the past.

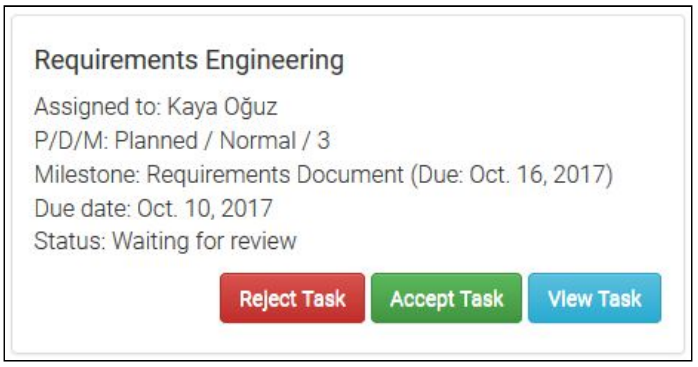
This puts the task into the “Waiting for approval” state. You cannot approve your own tasks, or the tasks you’ve created for other developers. The “Approve Task” button is disabled for the tasks that are created by the current user, or if the task is assigned to them. Another developer should “View Task” and then Approve it, so that the assigned developer can start to work on it. Notice that the milestone is set to “Requirements Document” and its due date is also stated.

Let's see how we view the task. This screen below shows the details of the task; the name, team, milestone, creator, assignee, title, description, creation date, due date, last modification date, priority, difficulty and modifier points, total task point and its status. This screen is vital because you may discuss the task using the comments on the right column. The comments are also used when you are done with the task and you want to share your work with your team. If it is a document, you can paste the URL on the optional "File URL" field, if it is source code, you can paste the commit link, possibly on GitHub, to this field.



This task cannot be approved by users Damla or Kaya. Someone else in the team will approve this, and then it will be listed under Kaya's personal list. Once approved, the task goes into the "Working on it" state. Now, Kaya will work on the task. Once he is done, he will "Submit for Review", which will put the task into review state.

The task, once completed, can be discussed from the view screen. Then, someone other than Kaya will have to accept or reject the task.



Once the task is accepted or rejected, it is completed and counts towards the total task points.

Points and Grades

As mentioned earlier, the project has several milestones. The lecturer will set the weights of these milestones and they should add up to 100. For every milestone, the team and the developers are graded using their task points. For example, for the “Requirements Document” milestone, the team members will perform several tasks. At the end, the requirements document will be submitted to the lecturer. If the milestone is rejected, all of the tasks are rejected, and the every developer will get 0 for the milestone. If it is accepted, the grade for each developer is computed as follows.

The first step is to compute the total team points. Every task, either accepted or rejected, count towards the total team points. So, let’s assume that for the Requirements Document milestone, which has a weight of 20, the following tasks are created:

Task 1	DEV1	7 pts	Accepted
Task 2	DEV1	5 pts	Accepted
Task 3	DEV2	6 pts	Accepted
Task 4	DEV2	2 pts	Rejected
Task 5	DEV3	10 pts	Accepted

For this milestone, the total team points is 7+5+6+2+10=30. The total accepted team points is 28. Therefore, the team grade is (28/30)*100 = 93.

Then, individual points are computed. Since the total team points is 30 (both accepted and rejected), and since there are 3 developers, every developer is expected to generate 30/3=10 points. DEV1 has 12, DEV2 has 6 (we don’t count the rejected), DEV3 has 10. Even though DEV1 has (12/10)*100 = 120 points, the individual grade counts as 100. DEV2 has 60 and DEV3 has 100. The purpose in setting the maximum to 100 is to aim for equal contribution from every developer. The final grade for this milestone is Team*0.4 + Individual*0.6, which gives us 97, 73 and 97 for DEV1, DEV2 and DEV3, respectively.

These grades are only for the “Requirements Document” milestone, which has a weight of 20 over 100. So, the contribution of this to the final project grade can be computed by multiplying the grades by 0.2.

The “View Team/Developer Points” button takes you to a page where it shows the grades for all of the members of your team.

The “View All Tasks” takes you to the page where all of the tasks are listed for your team.

References

Coppit, D., 2006. Implementing large projects in software engineering courses. Computer Science Education 16, 53–73. doi:10.1080/08993400600600443