

XP Logic for Queste

Users gain Experience Points (or XP) by finishing tasks. Default XP gained for each task – 100 XP. However, there are several modifiers.

1. Difficulty

Each task has its own difficulty, ranging from 0 to 1. Difficulty can be managed on task edit page by changing value of Difficulty slider.

2. Urgency

Each task has its own start date and end date. The difference between those two parameters is called Urgency. There are 5 values for urgency:

- task has to be finished today – 1
- task has to be finished tomorrow – 0,9
- task has to be finished this week – 0,75
- task has to be finished this month – 0,5
- else – 0,25

3. Time Bonus

Each task also has finish date, when the task is finished. The day, when XP gain for this task is calculated. Finish date may differ from end date, that's why there is another modifier. If task was finished before end date – user will gain more XP, if task was finished after end date – less XP.

Each day counts as 0,005 towards Time Bonus modifier. But total bonus can't be more than 0,25/-0.25.

Here is an example:

End Date: 1 January 2017

- 1) Finish Date: 31 December 2016 -> Time Bonus = 0,005 (1 day before)
- 2) Finish Date: 2 January 2017 -> Time Bonus = -0,005 (1 day after)
- 3) Finish Date: 2 December 2016 -> Time Bonus = 0,015 (30 days before)
- 4) Finish Date: 1 August 2016 -> Time Bonus = 0,025 (more than 50 days before)

4. XP gain formula

XP gain is determined by the formula:

$$XP = 100 * Difficulty * (Urgency + Time Bonus)$$

Here is an example:

Difficulty: 0,5

Urgency: Tomorrow (0,9)

Time Bonus: - 0,2 (40 days after end date)

$$XP = 100 * 0,5 * (0,9 + (-0,2)) = 100 * 0,5 * 0,7 = 35 \text{ XP}$$

5. User XP and skills XP

User gains XP in full for each task. For example, 50 XP task will give user 50 XP.

Skill gain is reduced by 50%. That means that 50 XP task will give only 25 XP to skill.

6. Level system

Levelling system is based on triangular number system multiplied on 100.

Triangular system counts the objects that can form an equilateral triangle. For example:

0, 1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78, 91, 105, 120, 136, 153, 171, 190, 210...

Level 1 doesn't require finishing any task. XP cap for level 1 is 0.

Level 2 requires user to have 100 XP, level 3 – 300 XP, level 4 – 600 XP and so on.