Requirements of CS109 2023S Project

1 Teaming Up

- Mostly **2** individuals a team, and you can only team up with those in the same class.
- Solo is acceptable, but we will not give special bonus for it.
- 3 individuals' team is also allowed, but will receive lower score (see Section 3.1).
- It's required to fill in your team form by 23:55, April 24, 2023. After that, students who have not formed a team will arrange a partner randomly.

2 Development

2.1 Language

All the source code must be written in Java, or other languages that can run on JVM (e.g. Kotlin and Scala). For example, writing AI algorithm in C++ and invoking by command line are forbidden.

Besides, build scripts do not apply to this rule.

2.2 Library & Copying

Using other libraries and frameworks is allowed, but you should clearly state which framework you use in presentation. Besides, if you use program fragments from others, or building your program based on other's idea, you should give credit to the original creators. Using other's code without reference, or trying to claim others' work as yours, will be treated as plagiarism.

> **Remarks** If you plan to use framework or refer to others' code, please pay attention to and comply with its license. For example, GPL-3 License requires you to opensource if you use its code.

Moreover, if you use framework or other's code, the grades of this feature may be affected according to different situation. For example,

1. Suppose that you are required to develop an AI for your game, you are expected to explore and learn some AI algorithm, and implement it by yourself. So if you find a piece of code from the Internet that perfectly meets your requirement and works well, and you directly copy and paste the code into yours, then you may not get a respectable points, since you do not put much effort into it.

   If we give you the points, it's unfair to those who spare no effort in learning AI algorithm, implementing and debugging in their projects.
2. On the other hand, suppose that you are going to implement the function of saving and loading a game, and you use Google's GSON for serializing your saves. In this case, it's acceptable and the points will not be affected, since you are using library as infrastructure and build something complex and cool based on it.

In reality, the cases usually can't be divided into a binary categories, so the final points will depend on your workload and will be discussed by professors and teaching assistants in presentation.

Also, we highly recommend that you start with a blank project instead of the demo, and we will give some bonus for it.

3 Presentation

3.1 Grading

The score of the project consists of two parts, Basic Tasks and Bonus Tasks. Individual score n is determined by the formula below. Suppose that

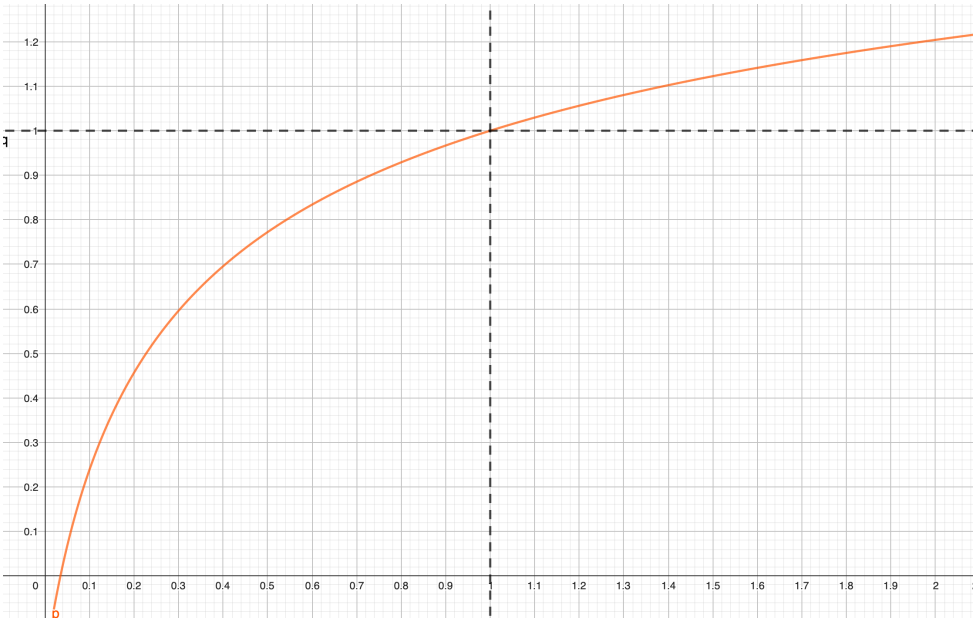
$$
\begin{aligned}
A &= \text{score of Basic Tasks, 80 at maximum} \\
B &= \text{score of Bonus Tasks, 20 or 30 at maximum} \\
N &= \text{number of people in your team} \\
\lambda &= \text{your contribution ratio} \\
c &= \begin{cases} 1 & , N \leq 2 \\ 0.7 & , N = 3 \end{cases}
\end{aligned}
$$

The sum of λ of each people in your team should be 1.

Then, we calculate

$$
\begin{aligned}
k &= \ln\big(\ln(0.85\ \lambda N + 0.15) + e\big) \\
n &= k(A + cB)
\end{aligned}
$$

The final individual score will be limited to 100 points unless you presents in lecture of Week 16 (see Section 3.2). And for your information, the image related to the contribution coefficient k is



x	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
$f(x)$	0.239	0.457	0.596	0.696	0.772	0.834	0.885	0.929	0.967	1.000
x	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
$f(x)$	1.030	1.056	1.080	1.102	1.122	1.141	1.159	1.175	1.190	1.204

Figure 1: the image and values of $f(x) = \ln\big(\ln(0.85x + 0.15) + e\big)$

In order to clear your confusion, here we show some examples about how the original scores and contribution ratio contribute to your individual score.

Basic Score	Bonus Score	Contribution	People	Individual Score
60	10	100%	1	70
80	20	30%	2	83
60	20	70%	2	88
80	30	20%	3	84
80	30	40%	3	100

Detailed grading rubric may be announced in the presentation day.

3.2 Presentation

In presentation, you are expected to show the implemented feature of your project. The score will depend on the completeness of your project. Also, we may ask some questions based on your intruduction.

You can choose to present in lab of Week 15 or Week 16. If you present in Week 15, you can receive up to 30 points bonus. If your project does well, you'll be invited to present in front of the class in the lecture of Week 16, and you will get extra 10 bonus (can exceed 100 points limit). If you choose to present in Week 16, you can get up to 20 points as bonus.

It's not recommended to present after the lab of Week 16. If you do so without reasonable reasons, you will receive a penalty.