Leap Second Planning



Surpassing the leader is a gamble that involves life and death and if you win you take control over a massive gambling organization, the current leader of the organization is Kiruma Souichi so Baku will have to challenge him but to start Baku needs to gather influence to get the requirements for STL. Baku has another gamble he has to do to gather enough requirements to win STL but he starts preparations at this point.

Baku madarame trying to challenge Surpassing the leader again aims to prepare for the game as much as he can. Before surpassing the leader, Baku needed to win a certain gamble and he was allowed to decide the length of the game, and now Baku starts his preparation.

Baku previously gathered information regarding Souichi's memory condition, Baku learned that Souichi's memories get wiped every month due to his special condition and during the gamble he did a while back he deduced that Souichi lost his memories. Now Baku knows when Souichi had his last memory wipe plans to make the surpassing the leader game be on the day where Souichi's memory loss will happen so if he gets lucky Souichi might experience memory loss mid game to lose or just before the game to confuse or pressure him. To make sure he can do this though, Baku asks the referee who is hosting the gamble that will happen before STL (surpassing the leader) one thing : "right after this gamble ends we are immediately starting STL right?". To get this confirmation means it allows Baku to adjust the end date of the gamble so STL will happen on the next day allowing Baku to decide at what day STL will happen.

Baku, knowing Souichi lost his memories on December 1st, decides the gamble he is going to play will end on December 31 so the STL game will start from January first, exactly one month after Souichi's last memory loss. Baku also realized that January first in 2009 was also the day of leap second and Baku tried to take advantage of this fact. Baku knows an occurrence so niche like Leap second will likely go unnoticed by all the people involved in STL so he plans to subtly manipulate the game he is going to play in STL so it involves time so Baku can have a hidden knowledge advantage.

When negotiating the final game before STL happens, Baku makes sure he brings Souichi to the game place with him so he can immediately play STL after the game is done so his timing of STL with Leap second can pay off.

After Baku finishes his gamble and wins, he now considers a way to actually use leap second to his advantage. Obviously the gamble is going to happen in a formal environment but even if the gamble was time related Baku will still need to make the game dependent on some kind of clock that accurately represents leap second so things like an alarm clock won't work. Baku decides to use a speaking clock on the phone as that is accessible anywhere, is known to be reliable so it's possible to be used in high stake gambles and it accurately displays leap second. Baku and all the other members required to play STL are on a remote island so Baku needs to check how leap second will be shown in the speaking clock via telephone by checking what kind of telephone line is running on the remote island he is on. He tells one of his allies to ask to make a phone call so Baku himself does not draw suspicion and while his ally acts like calling someone they test the speaking clock on the phone and realize it has a ticking system and relays that information to Baku.

he arrivates to the location of STL at around 2 hours before the leap second so after the preparation for STL is made, the leap second will occur pretty soon once the game starts. Now before the game starts Baku asks Yakou who is his referee to tell him possible games he is considering for STL and Yakou offers one game called drop the handkerchief which is a game that is timed. Baku seeing this indirectly implies to Yakou that he wants to play Drop the Handkerchief or DTH and after that meet up with Souichi only to be told that the referee that will decide the game for STL will be chosen through a battle between the referees in a battle royale style. Baku tells Marco, his ally, to assist in Yakou's victory so he can decide the game for STL since Baku knows Yakou will likely choose DTH.

As the referees are having their duel Baku asks Souichi to play STL early ignoring the referees knowing it's completely meaningless as even if either side wins, without a referee no one can prove it. Baku

intentionally mimics his behavior from previous games to make it look like he is just fooling around but while doing that he asks Souichi if he has any sort of clock or stopwatch. He asked this in a natural way as he said this in the context of playing a game where there is a time limit. Baku did this to confirm Souichi has no stopwatch or clock since Baku is trying to eliminate all alternatives to a clock from the STL game as possible. As we will find out Baku removes possibilities for (Souichi having a stopwatch or clock, using the physical clock inside the tower) so he can influence Yakou.

Now Yakou wins, but before he did that Baku told Kaji to be in the tower beforehand while not telling him anything. As Yakou, Souichi and Baku enter the tower to play STL they meet Kaji. Kaji just by being there was enough to indirectly manipulate Yakou. Baku intentionally did not tell anything about his plan to Yakou so Kaji will act calm and curious in front of Yakou. Now previously Baku has always been a schemer and Kaji being in the place of the gamble before hand and Kaji who is Baku's ally showing Yakou a unsuspecting attitude actually made Yakou who knows Baku's tricks to further have his guard up for possible cheats Baku might have told Kaji to set up. Especially knowing the stakes of this game Yakou will try to eliminate all possibilities of cheats and with Kaji raising Yakou's suspicion Yakou says he will not use the clock inside the tower to play DTH. Now Baku as Yakou says that tells him "are there anything else that can measure time reliably". To indirectly imply a telephone speaking clock to Yakou which Yakou chooses.

It is near impossible to rig a telephone system and because Baku influenced Yakou to use it in an indirect way both Yakou and Souichi are completely oblivious to the possibility of the clock having some sort of trick.

With this the game explanation starts at around 8AM and the game itself starts at around 8:14. The leap second happens at 9AM so Baku has about 46 minutes of gametime before the clock reaches leap second. As Baku listens to the rules of DTH he considers how he can use the hidden leap second no one is expecting to his advantage.

As Baku listens to the rules he finds a way to exploit leap second. Now the rules of dropping the handkerchief and the general situation of the game is as follows.

- General rules
    - The game is played with two players and a referee, in this game the two players are "Baku Madarame" also known as just "Baku", and "Kiruma Souichi" also known as "Leader" or "Hal", the referee is "Yakou"
    - The one who drops the handkerchief is "D", the one who checks the handkerchief is "C". Both players take turns playing each role
    - A turn is limited to 1 minute. During that time, "D" and "C" have to drop and "Check" once
    - If "C" finds the handkerchief, "C" wins. Otherwise "C" loses
- If "C" succeeds
    - the time before the handkerchief is found is called "squandered time" will be added to "C"'s cylinder container

        - if the cylinder container is filled up to the max capacity of 5 minutes, it'll be injected into the body immediately
- If "C" fails
    - add one minute of "near death drug" into the cylinder container, and then empty out the container and inject it all into the body
- Near death
    - After injecting the "near death drug" and confirming that the heart has stopped start timing the "squandered time"
    - After the "squandered time" is up, inject the "revival drug" into the body and start CPR for 10 seconds
    - After reviving "C", the match will continue as soon as possible
    - the guideline for how much near death you can survive is
        - total near death above 5 minutes will be a guaranteed death
        - the more times you experience near death, the less chance of revival, so if it's your first time a revival is likely, as you do more cycles of death and revival the chances decrease
    - each near death is coupled with a small predetermined amount of rest, in the case of a failed check the time spent until the next round is for 1 minute of near death 5 minutes, although it can change with the amount of near death and the amount of near death adds to the 5 minutes of time until next round, and for a successful check it will take 2 minutes until next round regardless of when the check succeeded
- Violation of the rules
    - the following acts will be treated as "unable to continue the match" and lose
    - committing any violent acts or damaging the devices
    - not "Dropping" or "Checking" within one minute
    - Any action that stalls the game
    - Not following the referees instructions
- Winning conditions
    - the opponent can't continue the game

The game is played in a singular room on top of a tower and in that room there is a chair in the middle. The floor has special coating so the sound of dropping the handkerchief can not be heard, there are also lights from every angle so the shadows of the opponent can't be seen. Meaning you can't see or hear the opponent if he is behind you. The person who checks sits in that chair and turns around when they want to check, the person who drops is not restricted in any movement, but is generally advised to stay behind the person checking as if they are in front of them its obvious what the dropping side is doing to the checking side, although this may be used to the D sides advantage by confusing the enemy which we may see later.

The game is based on the ticking clock, every send it makes a click sound and every change of a minute creates a tick sound. The players can count how many clicks there are to know the current time, the tick sound acts as the limit of the round, all players need to turn / check or drop within that time.

From these rules Baku finds a loophole to exploit Leap second. He realizes that in this game something called the safe strategy can be made. Basically because the dropper needs to drop the handkerchief within

one minute, if the person who is checking really doesn’t want to fail a check they can turn around as the clock signals the end of the minute to guarantee a check. Baku also knows that the ticking clock will signal the end of a minute twice when it's time for the leap second, the ticking clock will go “tick” for every second that passes and to mark the end of every minute it will make a “Pon“ sound, but in 9AM of this day the ticking clock will go “tick” for 8:59:59, “Pon” for 8:59:60 and another “Pon” for 9:00:00. Meaning there will be two Pon’s. Because Yakou stated during the rule explanation that the ticking clock is absolute and the game timing will be determined by the ticking clock, Baku knew if the ticking clock said there were two ends to a minute he knew it would pass.

Baku realized that he can make Souichi fail a safe strategy if the turn where Baku will drop was exactly aligned to leap second. Souichi who is unaware of leap second, had a check turn that started from 8:59 and wanted to pull a safe strategy then he would turn around as the ticking clock makes the Pon sound but Baku can drop the handkerchief in the second Pon sound and make Souichi fail a check even though he turned around when it had already been 60 seconds and Baku can not be disqualified for breaking the rules as he can drop the handkerchief in the next Pon and claim he dropped the handkerchief exactly one minute, since the ticking clock defined a minute not as 60 seconds but as 61 seconds due to leap second.

Baku knows Souichi is a beast at strategy and gambling and he knows without a hidden advantage he would struggle, Baku aims to use this “safe strategy” beating strategy so he can pull a sneak attack on Souichi to break his perfect guard. To do this Baku has to accumulate Souichi’s cylinder enough to where Souichi will realize he can not afford anymore failed checks as the time gets closer to leap second so once they reach leap second Baku can forcefully make Souichi fail his check and finish him off by injecting him with the near death drug to defeat Souichi.

This strategy has two moving parts to it, first Baku has to accumulate Souichi’s near death drug as much as possible so he can pressure Souichi to use safe strategies and kill him once leap second happens and second the difficult part is Baku has to subtly control the timing of the game so he gets the drop turn when Leap second is going to happen.

Each turn of DTH is composed of turn 1 and 2 so Baku and Hal both get to play drop each turn. After deciding who gets to drop at turn 1 with rock paper scissors, Souichi gets to drop first. As the game starts Baku decides to check early but not immediately so he can die but not make it obvious that he wanted to as he doesn’t check immediately. Turn 1 is Souichi's drop turn which also means Baku’s check turn, in turn 2 it's Baku’s drop turn which also means Souichi's check turn.

Now that Baku dies the timer has moved from 8:12 to 8:17, so Baku learns that as long as his accumulation that was injected is sub-2 minute the time spent dying to resting to the continuation to the next turn of the game is 5 minutes. Next turn when he is going to drop, Baku predicts that Souichi will not immediately turn around since no one wants to fail a check, Baku plans so Souichi will get a successful check but accumulates a lot of Near death drug in his cylinder so he gets closer to death. Also by not killing Souichi Baku can grasp the time spent when a person does not fail a check. Now Baku drops the handkerchief immediately and pulls a sequence of moves to distract Souichi.

He walks up in front of Souichi showing his pocket has something similar to a handkerchief only to drop it and reveal his necktie. Souichi who is a patient man will try to deduce Baku's intentions and also because Baku revealed himself, if Baku had not dropped the handkerchief he would be putting himself in danger so Souchi considering the possibility of a trap thinks for a bit further waiting for Baku to do more moves only for Baku to stay immobile. This all had the aim for Baku to drag Souichi's thinking so he wastes as much time as possible. Now Souichi does a successful check and the next round for Baku's check turn starts at 8:19.

From this Baku realizes that every successful check drags the time by 2 minutes. Also Baku tried to influence the pacing of the game by stalling, sitting on a chair when it's his turn to stand up, acting like he doesn't want to move but Yakou quickly warns him to stand up and Baku realizes the pace of the game is constant as it is.

Now Baku creates a framework in his mind to use the leap second called the leap second route. Basically the majority of turns in this game will end in successful checks and so this mental model allows for Baku to estimate the timing of the game assuming the pace is consistent by only having successful checks and Baku can alter these timing routes by dying which messes with the route they are on.

Basically since one turn of a successful check takes 2 minutes, one round of the game involving turns for both Baku and Hal will take 4 minutes. Assuming all rounds will take 4 minutes, for Baku to use leap second the round timing he needs to align with leap second will be the path 2. Basically because each round will take 4 minutes based on the assumptions that no check fails will happen there are 4 possible paths that the game progresses in. The time written is the time each round starts, and the timing route Baku wants to be on is 2 since because Baku is on the second turn when he is going to do drop, he needs the round to start at 8:57 so after he successfully checks, 2 minutes will pass and Baku will be able to drop starting from 8:59 and ending at 9:00, exactly when leap second will happen.

Timing route 1	Timing route 2	Timing route 3	Timing route 4
8:12	8:13	8:14	8:15
8:16	8:17	8:18	8:19
8:20	8:21	8:22	8:23
8:24	8:25	8:26	8:27
8:28	8:29	8:30	8:31
8:32	8:33	8:34	8:35
8:36	8:37	8:38	8:39
8:40	8:41	8:42	8:43
8:44	8:45	8:46	8:47

8:48	8:49	8:50	8:51
8:52	8:53	8:54	8:55
8:56	8:57	8:58	8:59

Currently the game is on timing route 4 since round 2 starts from 8:19, but Baku doesn't plan on getting on timing route 2 just yet since he still has a long way to go until 9:00 and more near death injections are bound to happen meaning its too early to actually force a leap second route yet.

In round 2 Baku does not want to die since if he does die right now he will force the timing route to change when the time isn't ready for that, so he turns around at exactly 60 seconds for a safe check. Souichi dropped the handkerchief 35 seconds into the round and accumulated 25 seconds of Near death drug in Baku's cylinder. Next round Souichi turns around quickly and dies, for 1minute 24 seconds and with Souichi's death the game is now on timing route 3 as round 2 took a total of 7 minutes with 2 minutes of Baku's check turn and 5 minutes for Souichi's check turn due to Souichi failing his check. Round 2 started at 8:19 and the next round started 7 minutes after from 8:26. Now if any round from here takes 7 minutes and not 4 minutes meaning one person dies at least once with a small enough accumulation so the total time spent will be 5 minutes for a total of 7 minute rounds due to the other round of successful check taking 2 minutes.

Now in round 3 Baku can not let a lot of accumulation happen so he has to turn around, Baku also realizes if he checks early this round he can plant a seed of misdirection towards Souichi. Souichi in the previous round has checked early which reset his cylinder so he can accumulate more near death drugs in his cylinder, Baku knowing Souichi knows the tactic of "transfering cylinder accumulation to your body to allow maximum accumulation in the cylinder", realizes something. Once he plants an idea in Souichi's mind that Baku is intentionally limiting accumulation even when it's risky and more rational to use safe strategy, it gives birth to an idea "Baku is trying to die 3 times". Yakou said dying twice is the safe range and the revival on the third death is not assured, but Baku has cultivated a sense of insanity in his previous gambles and knows it's not something out of the blue for him to do. If Baku is limiting his accumulation even when he can play safe strategies, it means Baku is trying to limit his cylinder capacity so much to where he can die 3 times and still survive due to the length of death for each being short. This will justify Baku's sudden deaths in later rounds to facilitate leap second timing as a part of his 3 death strategy.

Baku in this round needs to accumulate only small portions so he turns around immediately when he thought Souichi dropped and only accumulated 4 seconds of near death drug. This fulfilled the purpose of keeping his cylinder capacity low so his next near death will only take 5 minutes of game time so he can still adjust the leap second route, and it also planted the idea of the "3 death strategy" and it also inflated the image of Baku inside Souichi so Souichi in latter rounds will be more wary and afraid when going psychological warfare on Baku, giving him more freedom. The 3 purposes served justified Baku's risky check here. In turn 2 when Baku is going to drop he initially waits for Souichi to turn around but once he doesn't Baku drops at the 24 second mark, Souichi does a safe strategy and Souichi's cylinder increases by 36 seconds.

Now round 4 starts, although Baku started to plant seeds for his 3 death strategy which is a decoy, he knows that just one close check wouldn't solidify the idea into Souichi since it might be a coincidence and not a pattern which is why Baku predicted Souichi will still not consider 3 death, only after he pulls off multiple close checks will he consider such irrational possibility. So because Baku accumulated so little in the last round, if you don't consider leap second (which no one is aware of) and 3 death strategy (which no one is considering at this point) Souichi will assume Baku because he had made some breathing room in the previous round by doing a risky check and successfully accumulating very little, he would try to use that breathing room to safely check this round which leads to Souichi dropping the handkerchief early which Baku predicts and he checks early too. Baku only accumulates 3 seconds of near death drug in his cylinder. Baku in his turn of drop accumulates 34 seconds of Near death drug in Souichi's cylinder.

The game moved to the 5th round, and Baku planned to die this round. Baku did this so first he can reach the leap second route. Round 4 ended with neither Baku or Souichi dying so round 5 starts from 8:34, and is on timing route variation 3, and 2 is the one Baku wants to be on, if he dies this round with his 5 minute death due to his low accumulation of near death drugs and Souichi's likely check success this round will be 7 minutes which will mean round 6 will start from 8:41, which is on variation 2, and if no one fails checks until 9, Baku can successfully use leap second to get a guarantee kill. Baku can also do this since he laid the groundwork for his 3 death strategy. In the past two rounds Baku intentionally took irrational risks to limit his accumulation which indicates to Souichi that he wants to die 3 times since if he is only planning to die twice the extra risk of dying at a weird timing is so much bigger. Baku has already died once at the very start so if he planned to die twice he could only die one more time. If Baku does die this round without hinting at a third death, in Souichi's mind Baku will not die anymore in further rounds making Baku more predictable, but because he did set up 3 deaths he eliminated this possibility. Baku with his supposed 3 death plan also makes it so his immediate death now isn't suspicious as it's a good interval to reset if Baku is going to die 3 times. Also once he reaches 8:41 as round 6 starts, he will only have 4 more rounds assuming no failed checks happen until he reaches leap second so Baku can just play safe strategies 4times in a row to make sure he doesn't die. Now Baku can hop onto the leap second route with minimal risk and so he turns around immediately.

Souichi, considering the possibility of Yakou being fatigued to the point where CPR becomes difficult, wanted to get his cylinder reset first before Baku dies, so Souichi drops the handkerchief instantly before Baku turns around so Baku succeeds in his check, failing to die so Yakou does not get further fatigue from reviving Baku. Baku panics thinking Souichi saw through him but to make sure his image of himself inside Souichi's mind still remains large so he is more volatile to pressure and manipulation, Baku tells Souichi he basically gave him a free perfect check since Baku only accumulated 1 second of near death drug and Souichi acting confident that he out-played Baku is brushed off by Baku saying he is saying crap while results benefitted him more. Souichi in the next turn predicts Baku's drop timing and only accumulates 15 seconds.

Now we enter round 6 where it starts from 8:38 since the previous round started from 8:34 and although Baku planned to die so round 6 starts from 8:41 it failed so the timing variation is still variation 3. Now Baku checks instantly and gets near death to put him on leap second route. Baku revives and his check

turn has consumed 5 minutes so now all he needs to do is make Souichi succeed is a check but accumulate as much drug in his cylinder as possible so once he reaches leap second all that accumulated drug will finish Souichi. Baku instantly drops the handkerchief only for Souichi to check at 8 seconds.

Next round, round 7 starts from 8:45, on the leap second route Baku wanted to be on. Now he does a safe strategy no matter how likely he thinks it is for Souichi to drop instantly as Baku can just use safe strategies until the game reaches leap second and he does not want to make check fails which would change the leap second route variation. Baku checks at the last second but Souichi predicts this, and Baku gets 60 seconds in his cylinder. Baku thinks this is OK since he does not plan to fail any checks until leap second and once Baku accumulates enough he can kill Souichi at leap second to win. Now for Baku's drop turn he instantly drops to maximize accumulation and eliminate the possibility of Souichi dying but Souichi turns around instantly, and Baku could only accumulate 1 second of the drug.

Now round 8 starts from 8:49 since no deaths happened in round 7 meaning it took the standard time of 4 minutes. Now it's Baku's check turn and Baku uses the safe strategy again as he planned and this time accumulates 55 seconds as Souichi dropped in 5 seconds after the round started. Now in this turn Baku wants to accumulate again but decides to use another option, Baku knows Souichi keeps checking instantly abusing Baku's tendencies of instantly dropping. Souichi also has 1minute 34 seconds of drugs in his cylinder so once he fails a check he would die for 2minutes 34 seconds due to the added 1 minute. This means Souichi will die a full minute longer than the usual near death meaning it will also make a full minute longer to get to the next turn. Baku does not drop the handkerchief and Souichi fails a check and dies. Because Souichi's near death was a good minute longer his death takes 6 minutes and with 2 minutes since Baku didn't fail his check meaning it only spent 2 minutes for his check turn. With a 6 minute death and 2 minute turn round 8 takes 8 minutes which is a multiple of 4 meaning it's the same as two rounds of no deaths and it does not change the time route variation. With Souichi's failed check the drug Souichi experienced was basically added by 1 minute.

Finally round 9 starts at 8:57, exactly the time Baku needed to use leap second on his drop turn. Baku uses a safe strategy so he can successfully get dropped at the right time, and even though he accumulates a lot of drugs in his cylinder he moves on as the dropper at 8:59. Now Souichi who at this point has taken a total of 3 minute 58 seconds and died twice has his body close to its limits and if he dies again his total time dead will be 4 minutes 58 seconds which is not exactly 5 minutes but with 3 total deaths and a total time close to 5 minutes it will most definitely kill him off. Souichi wanting to avoid this will try to use a safe strategy especially because Baku's cylinder is so close to being filled up so Souichi will try to use a safe strategy this turn. Baku will hunt Souichi's plan to use safe strategy this turn by using the perfectly timed leap second that he planned and because it was built on so much subtle influence to orchestrate the entire setting of STL no one is expecting it.

Souichi, trying to use the safe strategy, turns around as he hears the sound that signals 60 seconds but that sound was actually a signal for leap second 8:59:60 and Baku drops the handkerchief at the next sound that signals the end of a minute at 9:00:00. With this Baku dropped the handkerchief in time since it was within one minute but Souichi failed his check as he turned around one second too early before Baku dropped the handkerchief. Souichi fails his check even though the safe strategy was logically supposed to be 100% safe and with this Souichi dies one more minute.

Souichi couldn't revive and Baku won STL.

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