

1. **Unequal Pair: [99, 1]**, In the case of unequal pair, the only two options which lead to an optimal harvest are whether to cut the bamboo with growth rate of 99 up to 99 days and then cut the bamboo with growth rate of 1 periodically which leads to a minimum harvest of 99 and a maximum of 198 incorporating both bamboos. However, in another approach we can just cut the bamboo with growth rate of 99 every day and it would still lead to the same **minimum harvest of 99**, considering an optimal diet for Pam the panda this approach is much better as we don't want to over-fee the panda on the 100<sup>th</sup> day.
2. **Oversupply: [10, 10, 5]**, Having three inputs as such I used the brute force technique to exhaust all possible schedules that could lead to a better harvest. The **best minimal harvest came out to be 20** with a schedule of cutting 1<sup>st</sup> and 2<sup>nd</sup> bamboo with growth rates of 10 each, alternatively. This result could also be achieved with a harvest of  $C = [0, 1, 0, 2]$  by incorporating the third bamboo.
3. **Precision: [2001, 1999, 1000]**, Again, I used the brute force technique and came up with the minimum harvest of 3998 scheduling the first two bamboos with growth rates of 2001 and 1999 being cut at alternate days. But I noticed that incorporating the third bamboo could increase the minimum harvest to give a **resulting 4000** with a periodic schedule of  $C = [0, 1, 0, 2]$ .
4. **Power: [16, 8, 4, 2, 1, 1]**, Using exhaustive search method for finding a schedule with this kind of data would be impractical. The highest achievable minimal daily harvest without optimization is 16, which can be obtained by cutting the bamboo with a growth rate of 16 daily or using a repetitive schedule  $C = [0, 1, 0, 2, 0, 1, 0, 3]$ . But surely a better harvest was possible. So, I considered the schedule with harvest of 16 as a reasonable initial step to build upon. I used this initial schedule as a constraint or condition to be met before any new bamboo could be cut as demonstrated by comments written in the code. Iterating over this initial schedule and also including the remaining bamboo growth rates of 1 each resulted in a better harvest of 17, 18, 20, 22, 24, and finally a **maximum minimal harvest of 32** consecutively.
5. **Odds: [9, 7, 7, 5, 5, 3, 3]**, Using a similar approach as above of restricting a reasonable schedule beforehand and then build upon that by iterating through every bamboo's growth rate and checking what its specific harvest would be when it repeats in the schedule. Restricting the bamboo with growth rate of 9 to be trimmed every 4<sup>th</sup> day the minimum harvest that could be achieved was 18. As the harvest could be multiples of the growth rate of bamboos given in the list the, adjusting their occurrence in the schedule keeping in mind when they should occur in order to increase the harvest, such as, to get a harvest of 25: bamboo with growth rate 5 should occur after every 5 days of more and that with growth rate of 7 should occur after every 4 or more days and so on. I kept increasing the target harvest from 18 to 28 and finally reaching a **maximum minimal harvest of 30**.
6. **More Odds: [9, 7, 7, 5, 5, 3, 3, 3]**, With a similar approach of constraining a reasonable schedule beforehand as used in the case of Odds above, I targeted a result than 35, and changed my constraint of bamboo with growth rate of 9 being trimmed after every 5 days or more which gave me a difference of more days within the consecutive cutting of the same bamboo. Also, since here I have more bamboo with lesser growth rates (the last three) to fill in the spaces hence not disturbing my result, using this technique, with the schedule of  $C = [0, 4, 2, 5, 1, 0, 6, 2, 4, 1, 0, 3, 2, 7, 1]$  I achieved a **minimal harvest of 35**.
7. **Fibonacci: [21, 13, 8, 5, 3, 2, 1, 1]**, Using a similar technique as used in the case of Powers growth rates, I thought of the initial result of 30 that I received to be a reasonable one to build upon. Restricting the cutting of the first bamboo for every 2<sup>nd</sup> day and consecutively adjusting the schedule for different results I achieved the **maximum of a 42 harvest**.