Steps in algorithms for planning:

1. Read the csv file which contains products their special features and deadline and so on.
2. For every product calculate the manufacturing time, which is calculated as (予定数量/流速)＊６０
3. For given product if ‘テンパ品’　is True then change the deadline to previous nearest working day by subtracting 1 to the given date. Ex: if day was Monday, then make it Friday, if it was Sunday make it to also to Friday else just subtract 1 day from the original date.
4. In given product if ストレッチ　is True then change the deadline to previous nearest working day by subtracting 7 to the given date.
5. Assign the multiple flags to the product which needs to be manufactured at the end or beginning and the products which allows sequential manufacturing.
6. Change the manufacturing date to weekdays if given product has deadline on weekend, by subtracting the given deadline.
7. Setting the date range for planning from products looking at its smallest deadline to largest deadline.
8. Loop through all the dates from smallest to largest say it as current date at each instance of planning:
9. Make a list of products whose current date is same deadline and if it’s not already planned to manufacture.
10. Make list of products whose deadline is not current date and has deadline up to 3 days from the current date.
11. Find the products which contains the flag as to be manufactured at the beginning of day set to True. (in such case if the product name is ‘KI(テンパー品)’ set its cleaning time as 60 minutes otherwise set it to 20 mins.
12. Find the products from current date which can be manufactured consecutively with the record determined in (c).
13. Calculate the total time needed to manufacture above products.
14. Do the same process for the products which must be manufactured at the end of the day.
15. Find the products which needs to be manufactured on current date but can be manufactured at any time of the given day.
16. After allocating current date equals deadline records, if we still have remaining time then we take the list of products from step (b)
17. If this product has flag as (テンパ品)‘cannot be manufactured within 24hrs with products of weight summing more than 51 ton set to True’ and if it meets the condition, then they are skipped otherwise they are kept as it is in the pool of products to be manufactured.
18. If there is remaining time, then products from step (b) is checked if they have records which must be manufactured at the beginning of day and if they can be manufactured then added in the pool of products to be manufactured. Same process is done for the products to be manufactured at the end of the day.
19. All the allocated products are checked whether their stretch flag is set to True or not. If Stretch flag is set to True, then if such product can have one specific day for the packing of that product before deadline is only kept in the pool to be manufactured otherwise skipped.
20. If there is remaining time on a given day, then products which can be manufactured at any time on a day are checked from list of products in step (b) and are allocated in the pool of products to be manufactured. This list is the planned products to be manufactured on current date. The process executes for all ‘current dates’ of loop and outcome is obtained.
21. Even after the planning if all the products could not be manufactured then select the nearest Saturday from the start day and put it in the date range for planning and again do the planning.

Replanning:

Replanning is the process where products with higher priorities are needed to be manufactured between date rage specified by user which needs to be inserted in the above planned result in such a way that the planned output has minimum effect.

1. Special products are assigned the flag in similar way in case of planning algorithm.
2. Deadline for each product is set by evenly spacing the date present in date range, if products contain the flag to be manufactured at the beginning of day is set to True then their deadline is set to last day of special product’s date range and next product of same type will have deadline as last day of deadline-1 and so on.
3. From the planned result the output is filtered for given date range of replanning, the current special products are set high priority and planned again the products which could not be allocated because of lack of time or other limitations are pushed next day and replanned this process in continued until all the products are planned or if there is no remaining day to plan.
4. Once the special products are allocated and if there are other product which could not be allocated but are outside the special date range are planned similarly as previous planning. by prioritizing previously planned output so that that they will have minimum effect.