Exercise at the Gym

Name: Xiaohu Xie

McGill ID: 260365840

Becoming a member ship of the gym is a good way to keep one under a good health condition. As a student who has heavy study burdens, the time spend in the gym would be limited. This project is aimed at designing an efficiency weekly fitness schedule. One should have a list of variant equipments or exercises available in the gym. Each exercise lasts a certain amount of time, and imposes certain amounts of exercise strength on some parts of body. Finishing one exercise one time is called a session. The fitness schedule tells people what exercise he/she should do and how many sessions of them every day in a week. Following the schedule will let one burn calories as much as possible, and at the same time, achieve a weekly balance of exercise strength among different parts of the ones body.

Objective
Burn as much calories as possible.

Constraints

1. **Time constraint:** All sessions of the exercises of a day should no more than the available time of the day. For example, Monday - 1 hour, Tuesday – 0 hour, and Sunday – 1.5 hour.
2. **Balance constraint:** The balance requirement can be achieved in two ways, either by setting minimum strength requirement for each parts of body or by setting maximum strength limit, or both.
3. **Diversity constraint:** No two sessions of the same exercise consecutively. That means if the program places two Treadmill on one day, it must put at least one other exercise on the same day.
4. One can personalize his/her fitness schedule by adding more constraints according to his/her exercise habits. Such as no elliptical machine session and Treadmill session at one day.

Data

The data vary from people to people. The demonstration data can be seen blow. Usually, the calories consumptions are indicated on the equipments. One can also ask the professional coach to evaluate the exercise strength and other data.

Table 1 data

Exercises	calories	Last (minutes)	Exercise strength					
			arms	shoulders	chest	abdomen	dorsum	legs
Treadmill		20		3				10

	A	B	C	D	E	F	G
Biceps curl	10	10					
Pec Deck	5		2	10			
Lat Pull machine	10	5	5			10	
Elliptical machine	20	3					7
Rowing machine	10	2		5	3		2
Abdominal exercises	10				8	2	
Triceps curl	5	5	2				
Minimum Strength required		20	15	20	15	15	25