Some System Ideas/Requirements

Problems With Exisiting Meal/Menu Generation Systems
- Limits the nutrients a user can consider
- Limited range of ingredients/nutritional info provided
- Restricts user goals
- lack of integration with domain theory and support tools for user (eg no or inaccurate BMR calculator, no reference to formula or models used, etc)
- Price often not considered. When it is it is usually restricted to US $
- Menu generators tell you what to eat, not how to fit the food you want/have to your goals.
- Availability of food also not considered in menu generation. User is just expected to have all of the food it suggests freely available to them. Issues like allergies, vegetarianism, restriction of diet for religious reasons, or even just not being able to stand a certain ingredient are not fully considered.
- Don't directly address dietary requirements for illnesses (though at the moment I'm not entirely sure what these are)

Functionality/Raw Requirements

Meal Generation (from user specified ingredients)
- Database to specify ingredients (most likely FatSecretAPI))
- Constraints
  - Nutrient ratios to be achieved
  - Minimum/Maximum of some ingredients to be used
  - Price?
  - Error bounds – let a user set a margin of error allowed for each nutrient (to give a greater chance of a solution). Obviously this is not in of itself a constraint but changes the previous constraints.
  - How to model ingredients as variables?
- Interface Issues
  - Varying degrees of end-user control: want to provide a full feature set for maximum customisability but not overwhelm new users.
  - Search for ingredients: needs to be quick and simple, with high findability. Maybe search by type of food, auto-completion search, etc.

Menu Generation
     Generate personalised meals for an individual to fit their goals, without forcing them to buy expensive or hard to find foods, or eat things they don't like or cant have.

How to do this? Start with recipes and tailor these or build meals up from scratch.

Some Ideas
- Like/dislike list. Let the user enter some of their favourite food and the foods they hate or cant eat. Foods they prefer are maximised and foods they hate are never used in menu generation.
- Online "Pantry". List of foods that the user wishes to include in their diet.
  - Nutrient values of each (plus price ?)
  - Let the pantry expand. If using recipes, find recipes where part of the ingredients list is in the pantry and suggest the missing ingredients to the user to approve?

- Substitution: provide some ability to substitute similar foods which can be interchanged with similar nutrients e.g. apple for banana, skimmed milk for Greek yoghurt, etc. How do we recognise which foods are interchangeable?
- Consider price. Try to minimise the amount of ingredients a user has to buy to minimise waste and allow for bulk buying. Try to use ingredients as efficiently as possible. We might do this by having the user enter the price of an ingredient and the quantity of the ingredient they gain with one purchase (for example, if you buy chicken you tend to buy a pack of chicken breasts, not just one!). May even wish to consider the expiry time of the food to avoid having to buy the same fresh ingredient twice in one week and again minimise wastage.
- Possibly link pantry to online shopping services to provide an automatic ordering feature.

Meals Generated
- Let these adapt and scale to changes in the user's goals and allow for substitution of foods
- Allow the user to regenerate a single meal at any time or swap in a custom meal of their own choosing/design.

General Account Features
- Reminders: remind users to take any vitamins/minerals they may need at certain times of day.
- Perhaps sync up with calendar apps or use simple mobile/email notifications.