

## IMAT3451 Project Contract Template

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**Project Title** Go Diet  
**Project Proposer** self

The name, affiliation and contact details of the project proposer; 'Self' if it was proposed by you.  
e.g. A. Proposer, Placement Corporation, 011111111, proposer@pcorp.com  
or M.Y. Lecturer, Department of Computer Technology, myl@dmu.ac.uk

### Supervisor

Dr Aladdin Ayesh, School of Computer Science and Informatics, tel. 0116 250 6295,  
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The name, affiliation and contact details of the supervisor, if different from proposer.

### Introduction

A brief but concise statement of the nature of the project.

The aim of the project is to enable an individual user to use a modern tool allowing recording of its weight and adjusting diet by selecting appropriate recipes that meet certain dietary criteria. The application based on some personal indicators should judge whether a person is classified to go on a diet to reduce weight, or whether the weight is appropriate and there is no need to. In the case where the user should go on a diet, the recipes should be adapted to the special needs of the user. The user should be able to record his weight every day, thanks to which statistics can be produced and predictions can be made for more effective adjustment of dietary recipes and outputted in nice, graphical way.

The software will be running on desktop machine. There are similar applications running on mobiles and other devices, but some users may prefer to make better use of desktop application – on computers. Having many applications can greatly reduce space on mobiles – and can be somewhat limited. Desktop application can be more robust than the mobile one.

### Project Background

A brief description (a paragraph of 100-200 words) providing the project background/context. e.g. is it based on a business need? a technical need? does it arise from the interests of a particular person/company?

The application is addressed to individual users who would like to take advantage of tools that enable them to achieve their desired goals, such as healthy weight. It is the answer to the increasing needs for controlling processes leading to the reduction of body weight, mainly fat tissue. It can be used as a support for a person using dietologists' advice, combined with moderate physical exercises tailored individually or simply wanting to maintain a healthy, balanced lifestyle. The task of the application is to motivate the user to achieve the desired goal, show the statistical data of the progress during the use of the diet program and intelligent prediction and selection of recipes based on available methods in the field of machine learning and artificial intelligence. The idea is developed by the student itself from scratch, it resulted in lack of satisfaction from existing online diet programs and need to improve these diet programs.

## Aim/Objectives/Deliverables

This is the heart of the Contract, and will require discussion with your supervisor and possibly several iterations to get it right. It is against the objectives and proposed deliverables that the final product will be assessed. So it is important to ensure that all aspects of the assessment criteria (see Blackboard) are included in the list of objectives/deliverables.

**Aims:** a statement of the overall aims of the project (in one or two sentences).

The aim of this project is to provide a desktop application that will allow users to get better insight into results and achieve desired goals while going on a diet to lose weight or maintain a healthy, balanced way of eating. Desktop application can appear to be more efficient and provide extra functionalities, such as possibility to print out the recipes which will be handier for the user.

**Objectives:** a list of specific, measurable objectives, each of which is likely to result in a deliverable. They specify all the work tasks to be undertaken to meet the stated aim. They will vary from project to project, as every project is different, but some examples are provided below.

1. Deliver a model assessing if a user should go on a diet or not using classification algorithm.
2. To propagate associate learning algorithms that correlate with user's live data to produce a multitude of live self-regulating algorithmic results that track user's eccentric weight loss progression in a graphical paradigm.
3. To explore machine learning algorithms and deliver a prediction modelling which will allow to adjust recipes based on number of calories etc for everyday meals.
4. Deliver a feature enabling printing selected recipes to PDF file
5. Deliver databases containing recipes, data needed for classification and prediction
6. Deliver accurate, concise documentation.

**Deliverables:** a list of your Project's deliverables with some general description. **Please list in your contract only those that apply and remove everything else.**

Development Projects	
<b>Final Submission</b>  These are some examples: each project will need a complete set of objectives/deliverables  Week 27	<ul style="list-style-type: none"><li>• Project contract (elucidation of the problem, the objectives of the project, risk analysis)</li><li>• Ethics form</li><li>• Project Plan (e.g., Gantt Chart)</li><li>• Global Checklist</li><li>• Literature Review</li><li>• Requirements</li><li>• Use Case Diagrams/Use Case Descriptions/Class diagrams</li><li>• Lifecycle (management approach with justification, adjusted plan for progressing with project)</li><li>• Description how verification and validation were applied</li><li>• Description of the use of tools to support the development process</li><li>• Final Report (containing critical appraisal of the project, indicating the rationale for any design/implementation decisions, lessons learnt during the course of the project and evaluation of the project outcome and the process of its production with a review of the plan and any deviations from it)</li><li>• Description of research hypothesis if any</li><li>• All research will be fully referenced</li><li>• Software</li><li>• Appendices (e.g. further design documentation, test logs)</li><li>• Maximum word count (main body): 10.000.</li></ul>
<b>Viva examination:</b> attended by the supervisor	<ul style="list-style-type: none"><li>• Oral examination (demo of your work)</li></ul>

and the 2 <sup>nd</sup> marker	
Weeks 31-33	

Students on a BCS accredited course should consult the BCS checklist before completing their project contract, as it includes eight conditions that the project contract should fulfil, such as

- The contract contains an elucidation of the problem, the objectives of the project, and a risk analysis
- The contract states that the final report will contain a clear description of the stages of the life cycle undertaken
- The contract states that the final report will contain a description of how verification and validation were applied

Most of these requirements also make sense for other students' project contracts."

## Resources and Constraints

A list of any specific resources that the project requires; for example, hardware and software; access to people or organisations.

A list of any known constraints, for example availability of certain resources.

Tooling

- Environment: Visual Studio 2017 – it is supposed to enable usage of MatLab language, Python and C#, should allow producing application working well on Windows OS.

Languages:

- C# as base programming language, ideal for applications working on Windows. It will serve as a base language.
- Perhaps some libraries of Python and MatLab in order to make a great use of Machine Learning and AI algorithms
- JSON files can be used for storing recipes data

Constraints:

- Time
- Data required for creation of mini database containing recipes
- Data model which will serve for classification and prediction modelling
- Programming languages compatibility issues if encountered
- Personal knowledge of Machine Learning and Artificial Intelligence topics

## Sources of Information

A list of sources you intend to use. These could include:

- Specific books/journals if you already know of them;
- Library/Internet;
- Organisations or individuals you intend to contact.

Books:

- "Python in Data Science"

Library/Internet

- Sources available on ACM learning site, conducted by O'Reilly
- <https://www.coursera.org/learn/machine-learning/home/welcome>
- Other courses provided by Coursera
- Scientific journals about healthy life style and nutrition

Organisations or individuals:

- To be agreed

## Risk Analysis

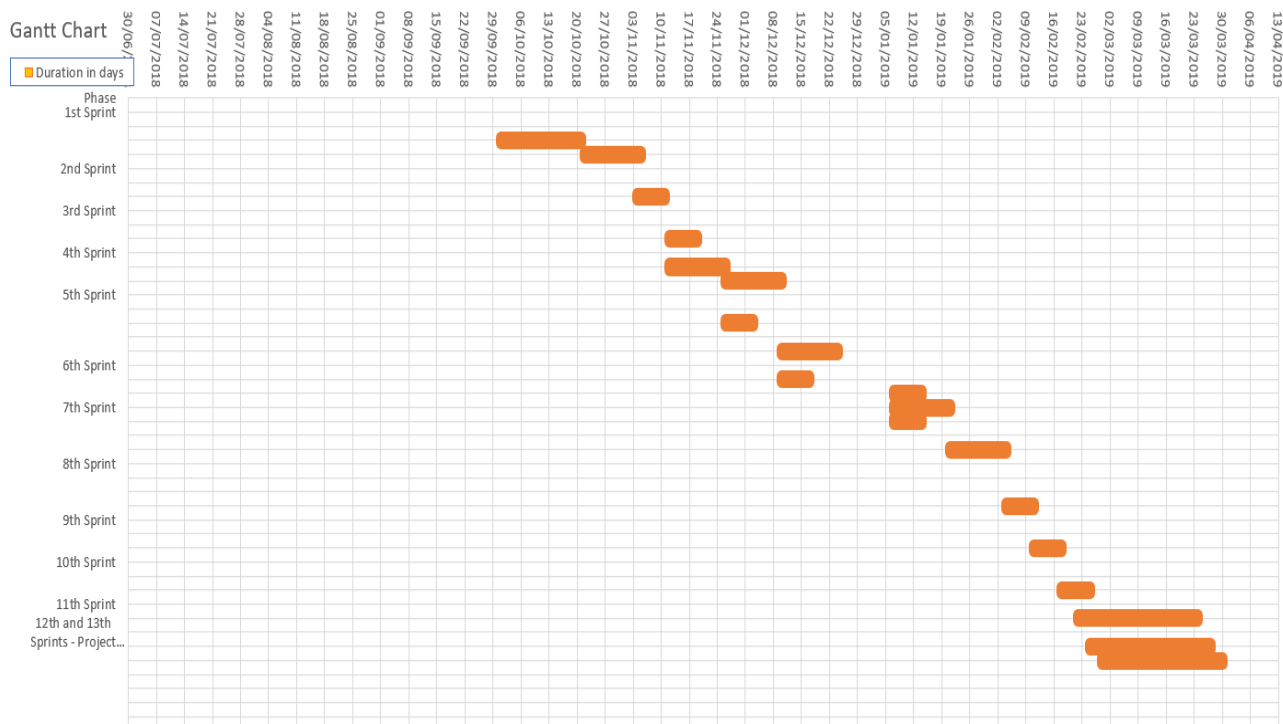
What could endanger your project, what will you do if it happens.

1. Limited time for building application. SOLUTION: Planning work up front.
2. Languages - for this application as best choice C# as base language has been selected. C# language seems to be the most compatible with Windows OS. In order to use Machine Learning and AI libraries Python and MatLab are intended to use. Visual Studio 2017 has been selected as working environment due to compatibility with Windows OS. The risk lies in integration of these languages in one application. SOLUTION: use of extensive libraries may be required.
3. Project will require substantial amount of data, such as set of recipes, data required for classification and prediction. SOLUTION: use of JSON files for storing information important for appropriate working of the application. JSON files are light weight and do not require to be stored in web-based databases.
4. Project will require some type of data in order to perform simple classification and prediction modelling. SOLUTION: reuse existing and open source data or create own data.
5. Project may require introducing some changes to initial plan due to its feasibility. For example, instead of using JSON files for storing data it may appear that using any SQL database may be more beneficial. SOLUTION: recording lessons learnt for better referencing.

## Schedule of Activities

Having defined the tasks to be undertaken in the list of objectives, you need to prepare a Project Plan to show how you intend to carry them out: You may find it helpful to draw up a critical path diagram before drawing a Gantt chart.

Plan for this project in form of Gantt Chart can be found below.



**Student Judyta Dabek**\_\_\_\_\_

**Date 12/10/2018**

**Proposer** (if other from the student and/or the supervisor)\_\_\_\_\_

**Date**\_\_\_\_\_

**Supervisor Aladdin Ayesh**\_\_\_\_\_

**Date**\_\_\_\_\_

Keep the signed copy somewhere safe: include it with your initial submission. Your supervisor will require a copy as well.