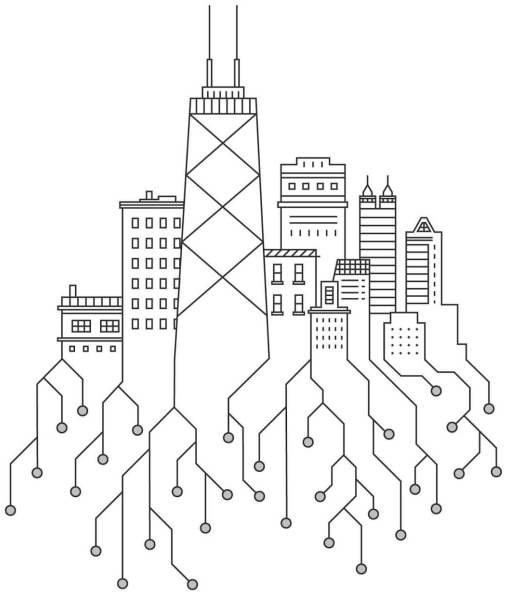
HOGESCHOOL ROTTERDAM / CMI

Project 3

Creating a data application



INFPRJ00-3

ECTS: 4
Module responsibles: I.S. Paraschiv

Description of the course

Modulenaam:	Project 3 - Creating a data application
Modulecode:	**INFPRJ00-3**
Aantal studiepunten en studiebelastinguren:	This course provides you with four (4) study points, which corresponds to a workload of 112 hours. The recommended distribution of these 112 hours during the study weeks is as follows: <u>Supervised lectures:</u> Kick-off: 3 * 50 minutes 2,5 hours Project lesson (for 3 weeks): 6 * 50 minutes 15 hours Presentation of the product: 3 * 50 minutes 2,5 hours <u>Unsupervised hours:</u> Time to work on the project incl. literature study 92 hours **Total** **112 hours**
Vereiste voorkennis:	It is recommended to have basic programming and database knowledge.
Werkvorm:	Project-based education (group-work).
Toetsing:	Examination is based on the process (Go or No Go), the partial product (25%) and the final product (75%).
Leermiddelen:	http://rotterdamopendata.nl/dataset
Draagt bij aan competentie:	▪ Analysis (**A**nalyseren) [**A1**] ▪ Design (**O**ntwerpen) [**O1**] ▪ Implementation (**R**ealiseren) [**R1**], [**R2**] ▪ Skills (**S**kills) [**S1**], [**S2**]
Leerdoelen:	▪ [**A1**] Given a specific problem, you can do a data-analysis to select appropriate data sources to solve the problem. ▪ [**O1**] You can design a data-model. ▪ [**R1**] You can implement a data-model. ▪ [**R2**] You can implement an application to visualize data. ▪ [**S1**] You can implement the project method Scrum. ▪ [**S2**] You perform the behavior that is required of an effective team member.
Inhoud:	You learn to work in a group context (*process*) and to realize a project assignment (*product*) for a client.
Opmerkingen:	Presence is **required**. The students can make groups themselves. Project groups have to exist out of 4 or 5 students. The class will approach their Tutor with their group suggestion and the Tutor always has a final say in this. *Note*: Groups that, during the course of the project, lose team members and remain with 3 (or less) students, will discuss with their project teachers about adjusted criteria for the evaluation.
Modulebeheerder:	I.S. Paraschiv
Datum:	24 March 2017

1. General information

1.1 Introduction

Having the first two projects finished already, you've gained some experience with working together in a project group. You delivered a (programmed) shippable product and Scrum was covered in all its facets. Put simply, you've grown more accustomed to different skills that are needed in your future work as a software engineer. During this project you will gain some further experience in a new aspect of this working field, namely working with datasets.

You will work in a project team again, in a 3 weeks time frame. Once again you'll be working together on a case that has to be finished in the end of week 10. Your Product Owner and Tutor will set the rules with regard to delivery and will guide you through the process. Feedback will be given regularly.

1.2 Relationship with other courses

You will need to apply all the knowledge learned during the three courses (Skl, Anl, Dev) in the project itself.

The knowledge acquired during the Skills course (INFSKL02-1) is tightly connected and applicable to every project you will encounter. You will continue to learn about documenting neatly and professionally, about communicating clearly etc. This period Skills focuses on an investigative attitude.The other two courses (Analysis INFANL02-3 and Development INFDEV02-3) are of course also crucial to bring this project to a satisfying end. In the ANL course you learned to model programs through UML diagrams. In the DEV course the focus was on more advanced aspects of object oriented programming, such as polymorphism and inheritance. Finally, the knowledge acquired during the course INFANL02-2 (relational databases design and SQL) has also a big role in this project.

1.3 Learning materials

Mandatory:

- N@tschool/Google Classroom (for deliveries)
- GitHub, https://github.com/
- http://rotterdamopendata.nl/dataset

Facultative:

- Other datasets are allowed to be used in addition to http://rotterdamopendata.nl/dataset
- Franken, M. (2013), *Scrum voor Dummies* (1e druk), *Amsterdam: Pearson Education Benelux B.V.*, ISBN 978-90-430-2403-7
- https://www.git-tower.com/learn/git/ebook/
- PostgreSQL https://www.postgresql.org / MySQL https://www.mysql.com
- Trello, https://trello.com
- Literature from Analysis 2 and 3, Development 2 and 3
- https://www.perceptualedge.com/articles/visual_business_intelligence/save_the_pies_for_dessert.pdf
- https://www.perceptualedge.com/articles/misc/Graph_Selection_Matrix.pdf
- https://erdplus.com/#/ or ASTA to produce data models diagrams (conceptual and physical)

2. Program and contents

2.1 Assignment

The goal of Project 3 is to create an informative tool about the city and its neighbourhoods, for current/potential citizens of Rotterdam. The application should contain visualizations/animations on interesting facts related to the city of Rotterdam.

During this project you will have the freedom in choosing the datasets (starting from http://rotterdamopendata.nl/dataset but not only) and which visualizations to display. You will create a database and develop the application.

In order to complete Project 3 successfully, you must formulate a set of “questions” that could be useful for current/potential citizens. Interesting topics are, for example: safety, family-friendliness, traffic, amusement, green areas, pollution, … Questions related to these topics could be:

- Comparison of neighbourhoods regarding the decrease in criminality during the last three years (with focus on a specific “crime type” such as car theft)
- Display on a 2D map the stops of public transportation and the parking garages (P, P+R)
  http://rotterdamopendata.nl/dataset/parkeergarages-gemeente-rotterdam
  http://rotterdamopendata.nl/dataset/haltes-ret
- Indicate where citizens file the most complaints about specific topics (sound, smell, …)

The **requirements** that must be met are the following ones:

- There are at least 3 questions that are approved by the P.O. (students are allowed to change the questions if the answers can’t be provided by the used datasets in agreement with the P.O.)
- At least two data sets are chosen
- The data sets are related to the city of Rotterdam
- The data sets contain information about the location (neighbourhood is also acceptable)
- At least one data set contains information about time (years, time stamp, ...)
- The answers to the approved questions are derived from the datasource by the application

2.2 Week scheme

The project covers the last three weeks of OP3: week 8 (sprint 1), week 9 (sprint 2) and week 10 (sprint 3). In this project it is again mandatory to use Scrum as a project methodology (see Attachment 1 for more details).

In the following table you can see the lessons of each week and the corresponding deliveries. Deliveries must be done **no later than 12 hours** before the start of the corresponding lesson. For example, if your lesson is at 10.30 on Wednesday, then you must deliver before 22.30 of Tuesday.

The deliveries will be done through N@tschool[1] or Google Classroom[1].

Week	Day (see schedule for detail)	Teachers present[2]	Topic	Deliveries (deadline: 12 hours before the lesson!)
8	Monday morning	P.O. and Tutor	Kickoff together with all the first years students and with your class	
8	~half of week	Tutor	Feedback on individual commitment (Go or No Go)	
8	~end of week	P.O.	Review week 8	Questions; Data sources chosen; Backlog
9	~half of week	Tutor	Feedback on individual commitment (Go or No Go)	
9	~end of week	P.O.	Review week 9	Updated backlog
10	~start of week	P.O.	Feedback on progress (on request)	
10	~half of week	Tutor	Feedback on individual commitment (Go or No Go)	
10	~end of week	P.O. and Tutor	Final presentations (review week 10)	Complete documentation; Final version of code with comments Presentation

Important note: for all deliveries, read the evaluation attachments for further details!

[1] The Scrum master of each group will have the duty of uploading the documents to deliver for his/her group (in zip file) called “INF1X – Group Y – Week Z”.
[2] If compatible with personal work schedules, Tutors are invited to attend the P.O.s lessons, and vice versa.

3. Evaluation

	Evaluated by	Evaluated through	Partial result
Week 8, 9 and 10	Tutor	*Attachment 1* (Evaluation form Tutor)	Individual/team contribution of Go or No Go (pre-requisite)
Week 8 and 9	P.O.	*Attachment 2* (Evaluation form P.O.)	2.5 points in total (1.0 points for week 8 and 1.5 points for week 9), 25%
Week 10 (final product)	P.O. & Tutor	*Attachment 3* (Evaluation form Final Product)	7.5 points in total, 75%

- The final grade is the sum of the partial results, with a maximum of **10 points** and a minimum of 1.
- The forms associated to each evaluation part are given in the attachments.

3.1 – Examples

The following partial grades:
- **Individual Go** from Attachment 1
- 2.5 points from Attachment 2
- 3.5 points from Attachment 3

bring to a final grade of 2.5 + 3.5 = **6** (voldoende)

The following partial grades:
- **Individual Go** from Attachment 1
- 1 point from Attachment 2
- 4 points from Attachment 3

bring to a final grade of 1 + 4 = **5** (onvoldoende) → herkansing

The following partial grades:
- **Individual No Go** from Attachment 1
- 2 point from Attachment 2
- 5 points from Attachment 3

bring to a final grade of onvoldoende → herkansing

3.2 – Herkansing (resit)

In case of an insufficient grade (*onvoldoende*) for INFPRJ00-3, the whole project has to be repeated during the following education period (OP4). The same assignment must be done again, but this time individually, without coaching and without supporting education. The final product will be evaluated again through Attachment 3 only. If you do not succeed at the resit, then you will need to follow this course again during next year.

Attachment 1 – Evaluation form [Tutor]

CLASS: INF1…, Group…

The Tutor part will be evaluated in two parts; an individual grade and a team effort. The individual grading exists of an attendance check and an assessment where you can prove that you fulfilled the demands of the basic role.

Individual grading [learning goal: S2]

Attendance will be checked during every Sprint. Attendance is obligatory to get a grade for the project. Only when a valid reason is given to the Tutor prior to the lesson, an exception might be granted only once. When you haven't met the attendance standards you will receive a No Go (meaning you haven't taken part in the course). The Tutor will write down the attendance in the following table:

	Week 8 feedback on contribution	Week 9 assessment contribution	Week 10 assessment contribution	**Total sum of week 9 and 10 (Go or No Go)**
Name 1	Notes:	Go / No Go	Go / No Go	**Go / No Go**
Name 2	Notes:	Go / No Go	Go / No Go	**Go / No Go**
Name 3	Notes:	Go / No Go	Go / No Go	**Go / No Go**
Name 4	Notes:	Go / No Go	Go / No Go	**Go / No Go**
Name 5	Notes:	Go / No Go	Go / No Go	**Go / No Go**

The groups' grade will determine the final grade that you will receive. However, individual contribution will also be taken into account. Within the confines of the project, we want you to deliver a 'basic' role in every project. If you do this convincingly (in the eyes of your group members, the P.O. and the Tutor) you will get the grade that the group deserved.

As a team member, you actively work together. This means that you will deliver a substantial contribution and helps and motivates your members to deliver a good contribution too. To make sure that the process runs smoothly, you work with the Scrum method and stick to the rules in the coöperation contract. You feel responsible for the process of the project. When the Tutor meeting takes place, your Tutor will ask you to provide evidence for the four criteria of the basic role. It is your job to prepare this before meeting your Tutor. Through an assessment, these criteria will be evaluated. In week 8 you will get feedback on your contribution with regard to the basic role. If you aren't showing the required behavior in week 8, you still get a chance to improve, based on the feedback given by the Tutor. You can still pass this project if you get a Go in week 9 and 10. However, if you get a No Go in week 9 and/or 10, you will get a No Go and won't pass the project. You will have to do a resit if this happens.

Basic role	Go	No Go
The student delivered a substantial contribution to the shippable product	The student (or group members) can give proof for this criteria.	The student (or group members) cannot give proof for this criteria.
The student has helped team members with delivering a shippable product	The student (or group members) can give proof for this criteria.	The student (or group members) cannot give proof for this criteria.
The student sticks to the rules defined in the cooperation contract	The student (or group members) can give proof for this criteria.	The student (or group members) cannot give proof for this criteria.

Team grading [learning goal: S1]

During every Sprint Scrum has to be applied. When the Tutor meeting takes place, your Tutor will ask your team to provide evidence for implementing the Scrum method (see the row below for the Scrum parts). It is your team's task to make sure that all the the Scrum parts are finished before this meeting takes place. **Every student** should be able to provide evidence for applying the Scrum method effectively. Through an assessment, the usage of Scrum will be evaluated on-the-spot, every student has to prepare this. If Scrum isn't implemented every week (or every Sprint) the group will get a No Go.

	Week 8 Scrum assessment	Week 9 Scrum assessment	Week 10 Scrum assessment	**Total sum of week 9 and 10 (Go or No Go)**
The group can give proof for this criteria	Notes:	Notes:	Notes:	-
The group cannot give proof for this criteria	Notes:	Notes:	Notes:	-
The group implemented Scrum effectively	Go / No Go	Go / No Go	Go / No Go	**Go / No Go**

Scrum parts:

- Sprint Backlog (User Stories, time estimate, acceptance criteria)
- Retrospective
- Burndown chart
- Scrumboard

Attachment 2 - Evaluation form [P.O.]

CLASS: INF1…., GROUP …

Week 8 review [learning goals: S1, S2] – Maximum 1.0 points

CRITERIA	POINTS
• The document requested is delivered on time • The document contains all required subsections (questions; choice of data sources; conceptual data model) accompanied by an explanation	YES => 0 points NO => Yellow card [3]
• There is a Product Backlog (PB) • The PB contains enough items to complete the product • Each item of the PB is associated to a unique ID	YES => 0.5 point NO => 0 points
• The sprint 2 backlog proposal is realistic (considering the workload) • The sprint 2 backlog contains all needed information o Selection of items from the PB and for each one: ID, user story, Moscow priority, planning poker, tasks, acceptance criteria	YES => 0.5 points NO => 0 points

Additional notes:

_____

Week 9 review [learning goals: S1, S2] - Maximum 1.5 points

CRITERIA	POINTS
• The documents requested are delivered on time	YES => 0 points NO => Yellow card
• The progress of the sprint backlog items planned for this sprint is...	Good => 1 point (you delivered all items) Sufficient => 0.5 points (you missed at most one item) Insufficient => 0 points (otherwise)
• The sprint 3 backlog proposal is realistic (considering the workload) • The sprint 3 backlog contains all needed information o Selection of items from the PB and for each one: ID, user story, Moscow priority, planning poker, tasks, acceptance criteria	YES => 0.5 points NO => 0 points

Additional notes:

_____

[3] See *Attachment 3* for consequences of yellow cards on the grade.

Attachment 3 – Evaluation form Final Product [P.O.]

Week 10 [learning goals: A1, O1, R1, R2, S1, S2] - maximum 7.5 points

During the last review, each group presents its product. During the presentation you must show the *features* of your product clearly, so that the Product Owner can evaluate the final result. The final grade for this part is obtained by summing up the points for each criteria.

CLASS: INF1…., GROUP …

CRITERIA	POINTS
• The product is delivered on time (documentation for the P.O. + code)	YES => 0 points NO => Yellow card
• The documentation for the P.O. contains: questions; data sources; conceptual and physical data model; screenshots of the application; contributors plot from GitHub • The code is commented (for other programmers to understand your program) • The requirements stated in paragraph 2.1 are met	**Prerequisite** to get the points of Week 10
The product contains the following *basic features (**you must choose at least 3 items from this list**)*: ● a database contains all the necessary data (value: 1p) ● there is a GUI from which you can access and interact with the data (e.g. by filtering or selecting) (value: 1.25p) ● the applications shows at least two different plots (e.g. goo.gl/DPpWtC | *Graph Selection Matrix - Perceptual Edge*) including legend/explanation (value: 1.25p) ● there is at least one query on data combined from multiple data sources (value: 1p) The product includes the following *additional features (**you are free to choose as many items as you want from the list below**)*: ● there is a parser which imports data in the DB (value: 0.5p) ● there is a UML 2.0 Use Case and Activity Diagram of the whole application (value 0.5p) ● the GUI contains a 2D visualization of the city showing animated data on it (value: 1p) ● additional feature proposed by you and approved by your P.O. (value: 0.5p or 1p)	**NOTE**: The teachers will assess each basic feature individually. Score of combined features = _____
The group received yellow cards...	0 yellow cards => 0 points 1 yellow cards => -0.5 points 2 yellow cards => -1.5 points 3 yellow cards => -3 points

Attachment 4 – GitHub contributors plot

At the end of the project you must produce a screenshot of the "**Contributors**" graph that can be automatically generated from GitHub. Each member should briefly comment on his part of the plot (explaining his/her personal contribution).
More information on GitHub graphs can be found here. An example of the Contributors graph is the following: