Preface

Our intentions with this report is to give the reader insight into the processes we have used doing the project. As well as the development of the system from brief, user stories about our requirements and some diagram showing a bit about our analysis of the program, and hope fully have a draft of the program for the customer that is to his satisfaction.

We have each been involved with the entire development process, but responsibility for the individual areas we split across the team:

Programming Servlet:   
 Cornel Lungeanu.

Programming Domain:  
 Kristian Hansen Buck.

Programming Technical:  
 Asger Jessen.

SQL query:   
 Asger Jessen.

Diagrams, User stories:  
 the Team.

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This report handles the group’s work on a given project. This project is about developing a Bike tilting game planner system, which is a distributed on an IT-System to support signing up, Lane creations, ongoing results registration and the communication of results

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# Introduction

This Assignment is about creating a WEB-solution for a Bike tilting game. This problem should be replacing the current “system” which is done manually by pen and paper. The program is expected to handle all kinds of Bike tilting tournaments, with different kind of age groups and maybe later even being able to handle normal tilting, with op to the max of lanes without effecting the core of the program

The system should be able to handle the signing up for the bike tilting, managing the Lane making in the different age groups, live updating results for the audience, access control is part of the system various volunteers that must log in to the system

Since this should be a web distributed program so the volunteers are able to handle their job with their own mobile devices. This implies that the servlet is needed where the volunteers/parents can connect and operate/observe the tilting.

# Problem Analysis

An app is what the Bike tilting needs, but as we cannot make apps yet, we decided to make a web-application so that you are still able to use your tablet/mobile device instead of a laptop.   
The web-application should be able to create a Bike tilting tournament with the different age groups,   
while having that made it is also important that each age group can have different kind of rules, on how many runs they have in each age group.

When the Tournament is created, the signup period is 1½ month before. Another problem is that if there are some last participant that comes in the last second and signs up must be put in the pool over the lanes and age groups, and be added to a lane and giving a shirt color and number. The participants are divided over all the Lanes in an equal amount. So that they will be done at about same time or that way you don’t have any lanes that are full and some empty, and you can always add new arriving participants into the lanes.

The score needs to be handles by the volunteers, and when they all had the last run in the end the result should be shown, those with the most points should go on to the next stage but not till all participants had their run in the different age groups.

## Vision

Now the Bike tilting is using pen and papers. They calculate how many participants there is from the different ages, then divide them in to equal numbers on each lane on Wednesday. When they print them out for Saturday and the volunteers write down the names on to the lanes, with their age group and where the number is lower than the other lanes and they do that for 1 hour while handing out the shirt color and numbers. When the tournament is on, the volunteers write down the paper for the lane and age group. The parents keep distracting them from always keeping track because they want to know how many points their children have. When the different age groups are down they have a knockout round, where the customer calculates the points to see who from what lanes are in the knock out phase. They do that with the three different age groups. This system has the potential to have many human errors.

# Subjects Programming (SDP) and Technology (CDS)

## Introduction to SDP/CDS

Java is the program we are working with, it is a very simple and basic developing language. We have been studding Java for 1½ year now. This project is testing our knowledge we have and for us to test our skills to see what we are able to make.

In this project, we are using “Servlet” and “HTML”. Servlet is a web service where we can run our Html code on so that it will be shows on a webpage link. With the web-link, we are able to communicate with the Customer and the Participants.

With the Servlet and HTML, we are able to make the software run on a website and we will not have the need to carry a laptop around but are able to interact with the Web service on a mobile phone or a tablet.

The Customers original dream was to have it as an app so you could have it on the phone/tablet, but since we have not learned to make apps yet we are using what we just learned, Servlet and HTML.

With doing it with a HTML it will also be possible to let the grandparents follow the tournament if they aren’t there but can just log on to the web-link and that way follow the score.

## Bike Tilting

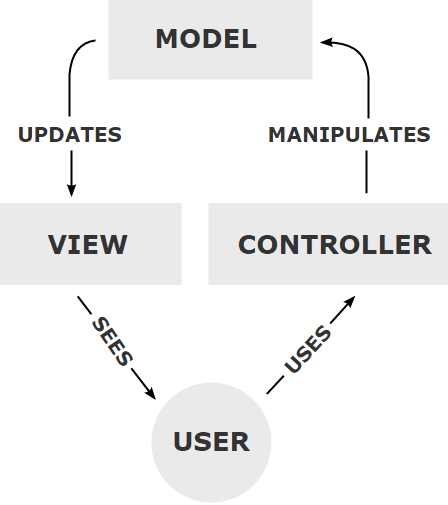
We started of thinking about how we could make the project.   
We were thinking what we should use either Restful or Servlet, we than decided on using Servlet. This way we could later implement it into an app.

### Design

Our group moved on to the structure, how the program should be. A typical structure was used, the 3 layered structure also knows as the MVC structure. See the picture in the appendix how it is represents an overview of out MVC

We are using the MVC pattern because it has become extremely popular for designing web application. It is also that it decides a software application into three interconnected parts. The MVC has High Cohesion and low coupling. This way the front end separates from the back end, like there is no connection between the servlet, logical part and the database, but all run through the controller.

Other reason for using MVC is that it is easy to maintain and if we do have some changes in any of the 3 layers it will not break the program, but will still keep working if the changes of course are done correctly.

The 4 Interaction in MVC

1. A **Controller** can send commands to the model to update the model’s state (e.g., editing a document) it can also send commands to its associated view to change the view’s presentation of the model (eg., by scrolling through a document)
2. A **Model** stores data that is retrieved according to commands from the controller and displayed in the view
3. A **View** generates an output presentation to the user based on changes in the model
4. A **View Controller** generates an output view and an embedded controller

### Participants sign-in

When we were working on the signing up part of the program. We had to think about the Database and a handler for the Database. We wanted to make sure that when we had a participant in the database we wanted it to hold the information, about what shirt-number, color and what lane. Therefore, when we got the few information the parents could provide on the website we had to send some empty values down to the database so we did not have to create another table later on just so they could get a shirt-number, color and lane number.

The empty values with the shirt number, color and lane will be filled out when the customer starts the event and created the tables and the Participant sorting algorithm divide the participants in the different age groups into the lanes with equal amount of participants and add the color and shirt number to the participants.

### Live Score

### Webpage as GUI

### Database

After that was decided, we started working on making a Database, database handler and participants as to the requirements we choose to do from our Product backlog.

We knew that we needed a table to have the Participants, a table for the admin user, a table for the Score, lanes and later on for shirts.

We started creating the participants and admin table first, and reused an old java class we all have that is the DBHandler, we started to also work on the participants class and created

The more we worked on the requirements and doing the various diagram, for the program. As we worked we noticed that we had some more questions for the customer, we did talk with other groups about the question and almost every group had the same question. As none had the answer, we did ask for a meeting with the customer.

As we did work on the programming the Database we did some modification, so that we could add the changes, we made while we were creating the participants and the way the score system had to work.

After the conversation. We had with the customer about our questions about the. Participants, lanes, and score and knock our rounds. We have then found out that we made some mistakes, we thought that he first starts the even on Saturday, and gave the t-shirts out on the lanes and that the signup did not end before then. However, you have 1½ month to sign up, then it they close Wednesday, so he can make the list of participants in the lanes and age groups. Then the volunteers will be able to add more participants to the event from 12:30 – 13:30, than while they are signing up the participants, they add them in the different lanes where there is space in their own age groups and handing out the t-shirt and color.

While working with the algorithms for the placing the participants into the Lanes and giving colors to the different lanes

## Program Screenshots

This is some pictures of our program, so that you get a visual effect of what the program looks like running as a reader.

Here you will first be able to see what we have been able to make run and then show or talk to you about what we could not get finish.

### Signing up

### Adding Score

### Watching score Live

Technology

what have we used, Servlet, Cloud, HTTP, 802.11, 3/4g? , Port

## Conclusion for SDP/CDS

# System Development (SDM)

## Scrum introduction

Scrum is an iterative and incremental agile software development methodology for managing a product development as the “Bike tilting”. The method is very flexible, meaning that even when we are working on the product the customer is able to change his/her mind about that they want and need, (often called “requirements volatility”).  
The team, works as a group where they want to reach a common goal. This enables the team to self-organize by encouraging physical co-location or close online collaboration of all team members, as well as a daily face-to-face communication among all team members and disciplines in the project.

Each project consists of various amount of groups. Each group has a development team that consists of 3-9 individuals who do the actual work. The work consists of. Analysis, design, develop, test, technical communication, documents, etc. The development teams are cross functional, with all of the skills as a team necessary to create the product increment. Each increment is a part of the bigger product, where they divided it up in smaller parts. Each team gets a part of the product they need to develop and then when it is completed all teams combine the parts they made and test the product to see if it works.

Scrum Master. Is the person that is accountable for removing impediments to the ability of the team to deliver the product goal. A Scrum master is not a traditional team leader or a project manager, but acts as a buffer between the team and any distracting influences, also makes sure that the developer’s uses scrum as intended. He/she also helps ensure the team follows the agreed scrum processes, of then facilitates key sessions, and encourages the team to improve.  
The Scrum Master role referred as a team facilitator or servant-leader to reinforce dual perspectives.

Work flow, is divided into sprints, the sprint is a timeboxed effort; witch means that it is restricted to a specific duration. The duration is fixed in advance for each sprint and is normally between one ween and one month, with two weeks being the most common. Each sprint starts with a sprint-planning event that aims to define a sprint backlog, identify the work for the sprint, and make an estimated commitment for the sprint goal. Each sprint ends with a sprint review where they look back to see what goal they did achieved in the sprint and what they could/couldn’t make, and a sprint retrospective that reviews progress to show to stakeholders and identify lessons and improvements for next sprint

Product backlog, is a list of requirements that the scrum team maintains for a product. It consists of features, bug fixes, non-functional requirements, etc. whatever had be done to successfully deliver a viable product.  
items added to the backlog is commonly written as a story format, the product backlog is ***what*** will be delivered.

## Main Section

The project started by making the **Product Backlog,** The product backlog is when the customer writes down the requirements needed in prioritized order for the system leaving the estimation of hours of work for the team.  
Since we have a REAL customer in this project, we had a list of requirements. We have to of the requirements that the customer wanted us to make, over any of the others.  
The Customer had a list of Requirements it consisted of 7, but we can only make 3 in the short time where 2 of the are the ones he wanted the most

The project consists of 4 requirements: **add Participants, record Score, Real time Results for Parents, Store   
 - Data in DB.**

We selected only a few of those requirements, because of our short timeline. We selected those we thought would be the most important requirements, that is needed around the 2 core requirements our customer came with. The requirements we selected were : Create Database,

We did split the 3 weeks we had into 3 iterations also called Sprints.

### Sprints

First 1st Sprint.

In the first sprint planning meeting, we started to think about what requirements we wanted to do in our 1st sprint, we selected: Sign up, Store Data, create Database,

Second 2nd Sprint.

In the second Spring we talked about what requirements we wanted to implement.   
2nd Sprint we selected: show Score, handle Score points

### Kanban board

## Conclusion on SDM

# Apendix