DEUCE

A Whist Drive System

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Submitted April 2004, in partial fulfilment of
the conditions of the award of the degree BSc.

I hereby declare that this dissertation is all my own work,
except as indicted in the text:

Signature _____

Date 15 / 04 / 2004

Abstract

This document describes a Final Year Project with Faculty of Information Technology at University of Akureyri. This project has been given the name DEUCE and is about computerising a whist drive database. The student is Sveinbjörn Þ. Sveinbjörnsson and supervisor is Mark O'Brien.

This report is divided into some sections. The first section is of motivation of the work followed by description of the work and related work. Designing is next followed by implementation and evaluation. In the end will be references and appendices.

The project started in September 2003 and has been in progress since.

At this stage the program has been written. Information can be added and the program can work it out. None extra features have been made, but many possibilities are in the future.

All names of windows and buttons are written in Icelandic with English translation in Appendix C. Parentheses around the name is also used to identify buttons.

Additionally, the appendices include a full list of all code belonging to this project.

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Motivation for the work

A whist drive is a social gathering game where whist is played. Many people can play a whist drive but on each board are two men and two women. Each board has a number. A man and a woman play together. The winners of each hand move to different tables to play with the losers of the previous hand, the woman to the table with higher number and the man to the table with lower number. The man who loses, move to left and deals. This is shown in following diagram (*Figure 1*).

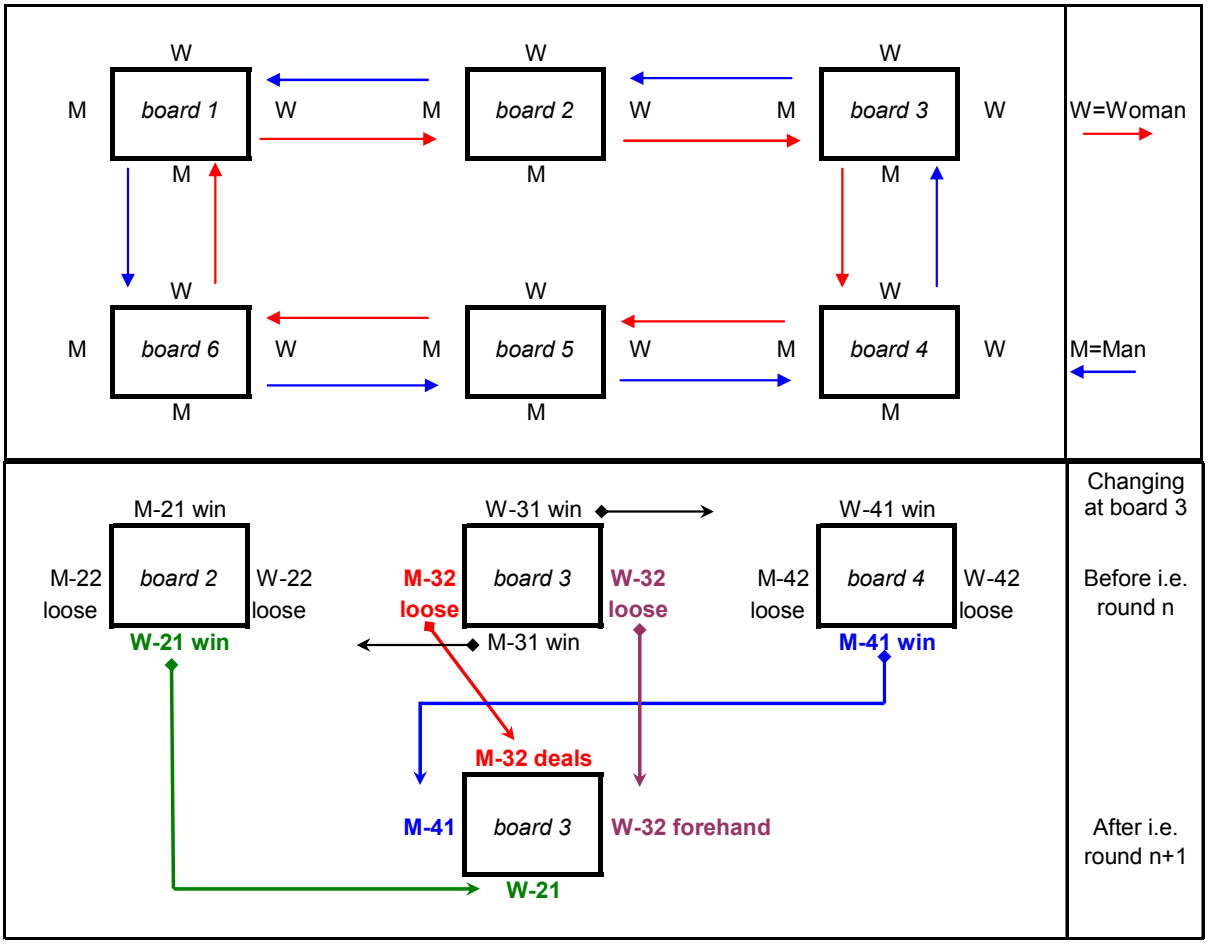
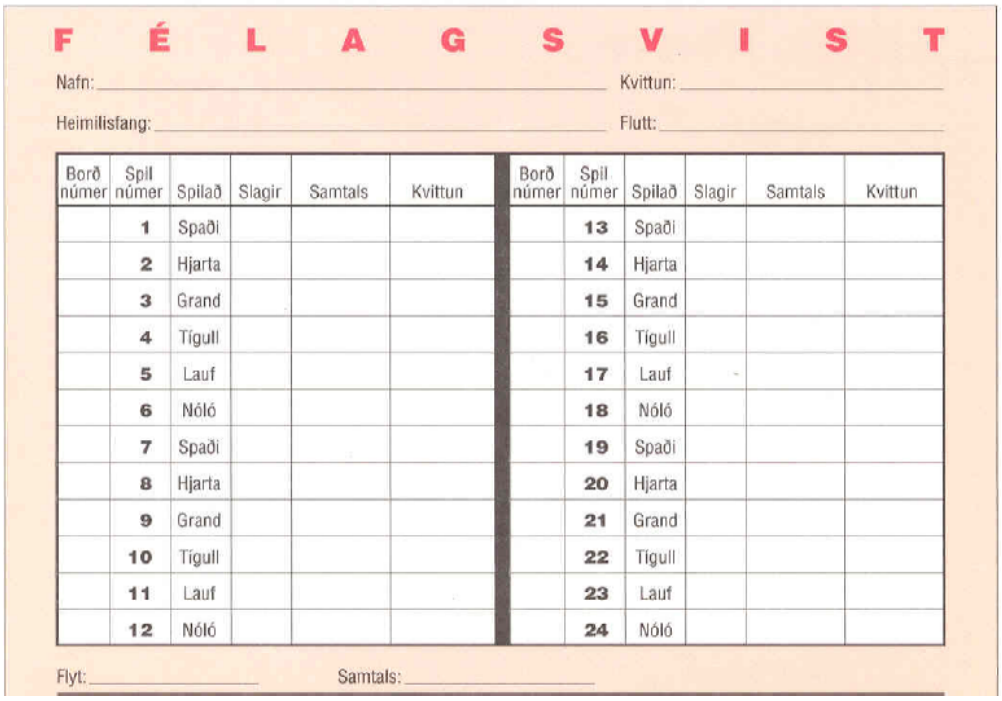


Figure 1 – Moving of winners

The game takes usually one night and 24 rounds are played. To win each round, people need to win at least seven tricks. The winner is the person with total highest score over the night. Sometimes are played more nights (then usually three) and the winner is the person with highest score after all these nights.

In beginning of each night, people are handed a scorecard (*Figure 2*). These scorecards have some columns where you fill in information as board number and tricks. The last column is for signing. By signing is mean that one of the person you are playing against confirm your score and adding.



F É L A G S V I S T

Nafn: _____ Kvittun: _____

Heimilisfang: _____ Flutt: _____

Borð númer	Spil númer	Spilað	Slagir	Samtals	Kvittun	Borð númer	Spil númer	Spilað	Slagir	Samtals	Kvittun
	1	Spaði					13	Spaði			
	2	Hjarta					14	Hjarta			
	3	Grand					15	Grand			
	4	Tígull					16	Tígull			
	5	Lauf					17	Lauf			
	6	Nóló					18	Nóló			
	7	Spaði					19	Spaði			
	8	Hjarta					20	Hjarta			
	9	Grand					21	Grand			
	10	Tígull					22	Tígull			
	11	Lauf					23	Lauf			
	12	Nóló					24	Nóló			

Flyt: _____ Samtals: _____

Figure 2 - Scorecard

The problem is that the scorecard is not always correctly filled out. To avoid errors, people are asked to check, and recheck the others scorecard. But that's not enough.

Most common error which people make is adding number of tricks wrongly. These errors are not so difficult to spot, because by simply adding again spot these errors. But spotting errors and which happens when wrong numbers of tricks are written down can be both difficult and time-consuming. By reason of personal experience

> *The aim of this project is to store the score of players at a whist drive, spot errors, correct errors and display information.*

Description of the work

The first thing to have in mind when writing program like this is that necessary to have it as simple as possible. People have different computer background and what seems easy for people who know something about computers, can be nightmare for others.
The requirements are following; a simple interface, easy to fill in and handy to gain information.
DEUCE is built up of several classes. Some classes are used to make user interface, but other are used to write to DB and to gather information from DB. The interface is made by using JAVA swing and windows look and feel. Its looks were similar to windows interface and therefore should it be easier for people which are familiar with windows interface to learn to use DEUCE (*Figure 3*).

Figure 3 – Main window

From main window is possible to open some windows which all have certain function. Other windows are only possible to open in certain order. In main window are menu which is always possible to get to. In the main menu are three choices; `Skrá, Upplýsingar` and `Hjálp` (See also Appendix C for English translations).

Figure 4 – Skrá

From Skrá (Figure 4) user can chose Nýtt mót, Sækja mót, and Hætta.

Figure 5 – Upplýsingar

From Upplýsingar (Figure 5) user can chose Kvöldlisti, Mótaskrá and Lesa saman kort.

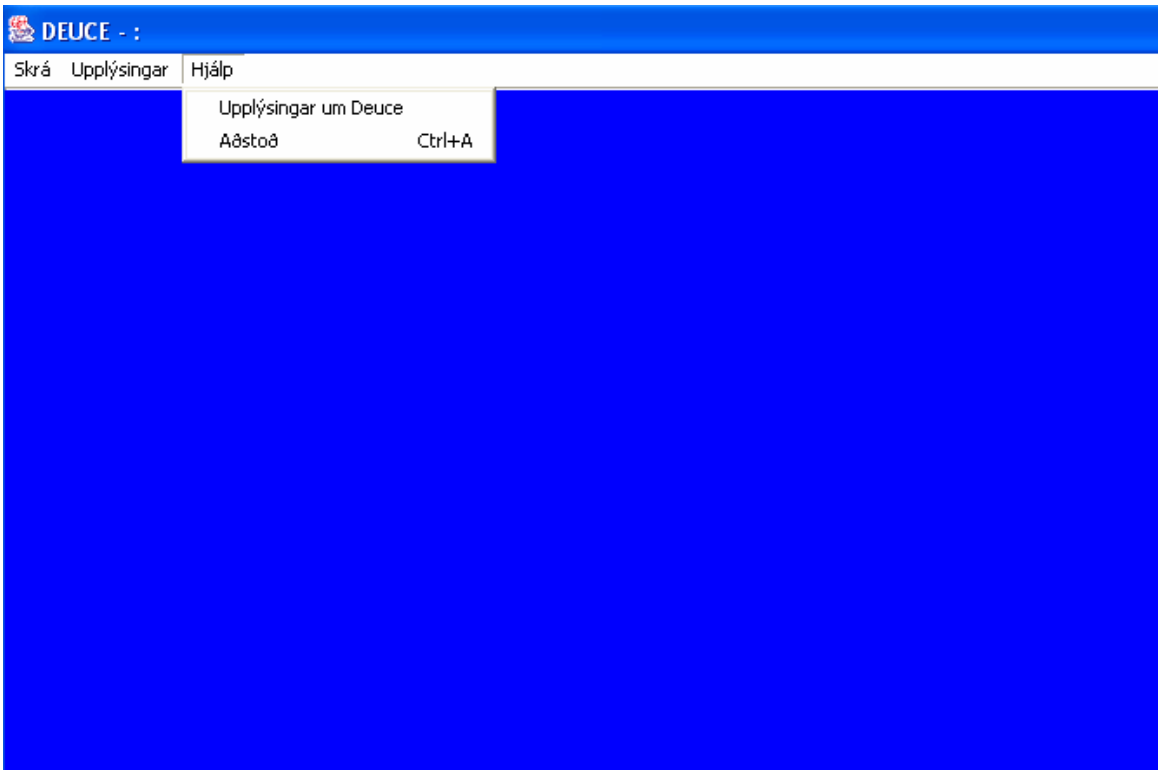


Figure 6 – Hjálp

In `Hjálp` (`Figure 6`) are help and information of DEUCE.

By taking menu from left to right, the first selection is `Skrá`. The first pick is `Nýtt mót`. When people are using DEUCE, they have to fill in information as; who held the tournament, where it is held, total number of nights and date of first night (`Figure 7`).

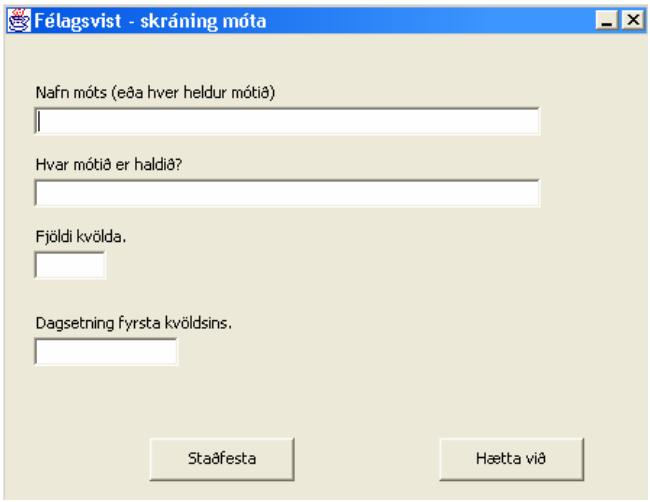


Figure 7 – Nýtt mót

If (`Hætta við`) button is selected the window closed without keeping information. If (`Staðfesta`) button is selected the information is written into Places table in database. This information is used to identify this special tournament and will be used later. `Nýtt mót` window close and `Sækja mót` window opens.

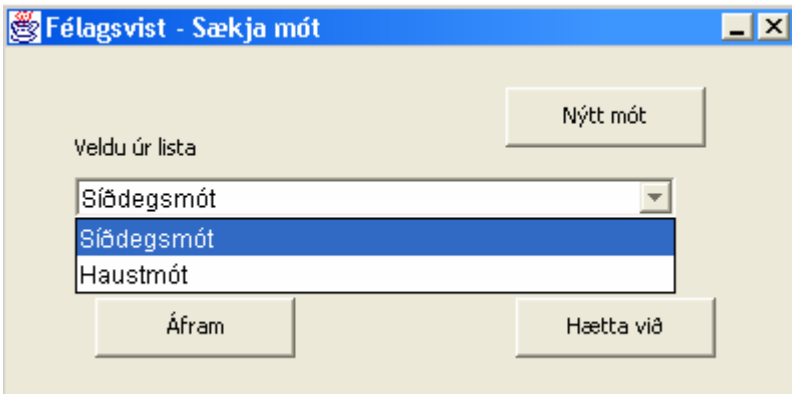


Figure 8 – Sækja mót

Before the user can fill in or gather information he has to do is choosing which tournament he is going to work with. To do so is used next pick `Sækja mót` (`Figure 8`). This window has dropdown list where user pick which tournament he wants to use. If the tournament is not in the list, the user can choose (`Nýtt mót`) button and open window for new tournament (`Figure 7`). At this stage the user can cancel his choosing by using (`Hætta við`) button or confirm selected tournament by choosing (`Áfram`) button.

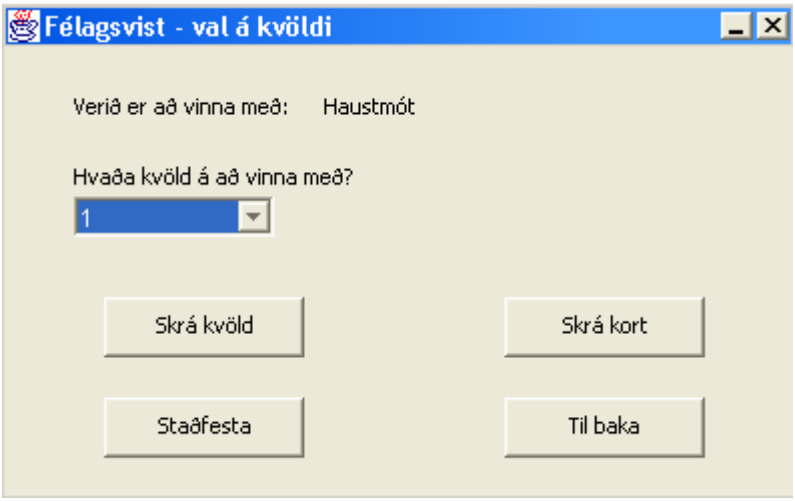


Figure 9 – Val á kvöldi

By choosing (Áfram) button a new window Val á kvöldi will displays. In this window (Figure 9) the user choose from a dropdown list which night he is working with. How many nights number displays in dropdown list depend on previous information of which tournament are in use. This information is gathering from places table in the database. Here are four buttons, (Skrá kvöld), (Skrá kort), (Staðfesta) and (Til baka). If (Til baka) button is selected, Sækja mót window displays again. By choosing (Staðfesta) button DEUCE keep information to use on later stages. The two other buttons ask for further information. (Skrá kort) opens Skráning korta windows, which is explained later (Figure 11). (Skrá kvöld) button opens kvöldupplýsingar window (Figure 10). This window is necessary to fill out for each night because date of the night, number of players and number of boards are based on this information. From number of players the program calculates at how many boards people are playing.

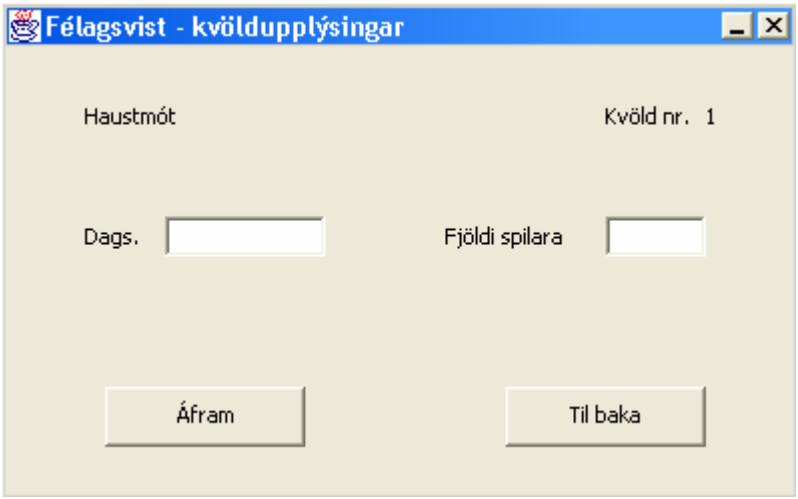


Figure 10 – Skrá kvöld

From this window it is you can either go back to previous window by using (Til baka) button or go to next step by using (Áfram) button. Then will the program write information to Nights table in the database, close this window and open next window which is Skráning korta (Figure 11). This window is used to fill in information from scorecards.

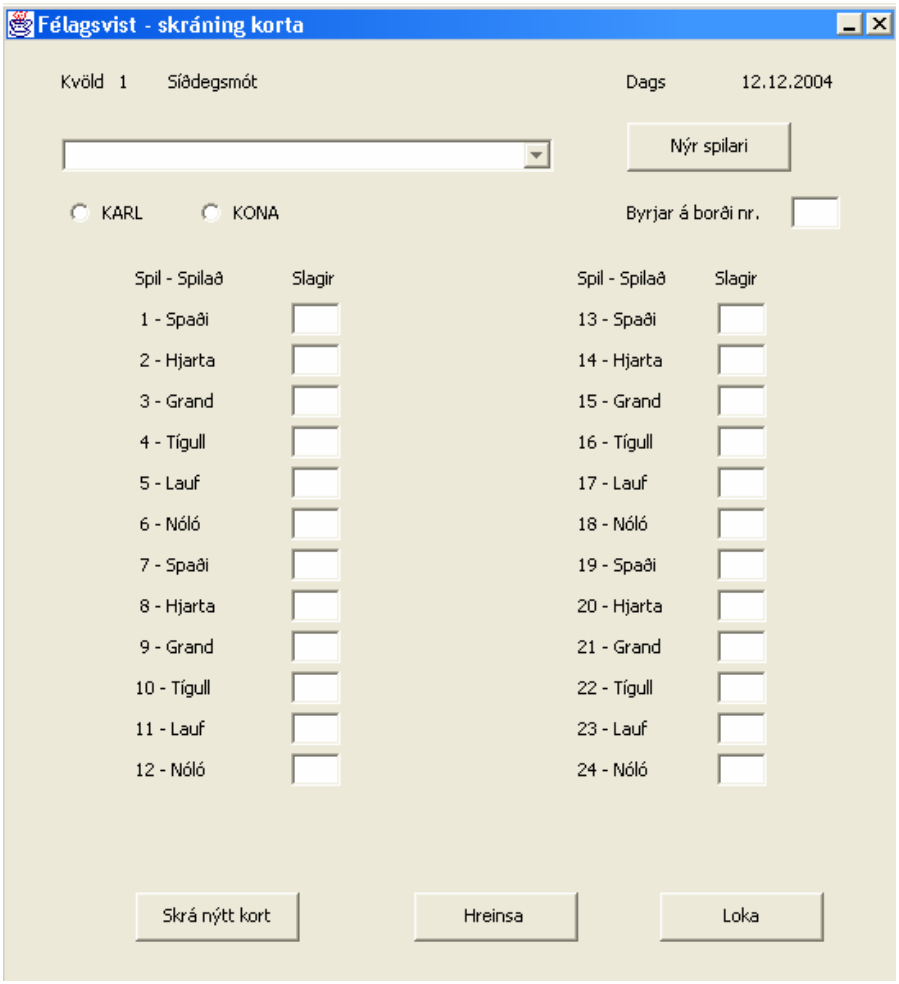


Figure 11 – Skráning korta

At the top of this window, the program displays information as; night number [*kvöld 1*], tournament name [Síðdegismót] and date [dags 12.12.2004]. This information is gathering from previous window. Other information, which are gathering from previous window and doesn't display, are number of players. This is used to calculate board number as explained later. At this stage name of players is selected from drop down list. The name list is created from information of tournament so only names of people which have been playing at this given tournament in previous nights are displayed. If the name is not in the list or this is the first night (the list is empty) the official creates new by using (Nýr spilari) button

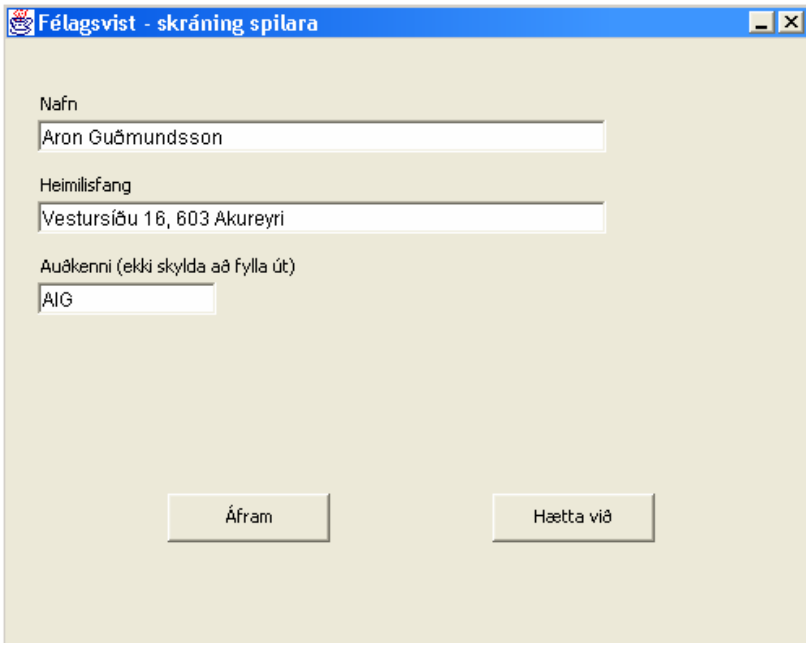


Figure 12 – Nýr spilari

Then will new window (Figure 12) opens where information of the players as name, address and identifier are filled in. Only name is required, other information are optional. Identifier can by id number, players initials or other letters or digits. By selecting confirm button, information are written in Names table in database, Nýr spilari window closed and Skráning korta window opens again. The new name is first name in the name list and displays in the window. Now is necessary to select radio button what this player is playing as man or a woman and number of the board the player begins. After that only tricks for each round are filled in. On the bottom of the window are three buttons. These buttons are Skrá nýtt kort), (Hreinsa) and (Hætta við). (Hætta við) button close the window without keeping input information. (Hreinsa) button clean input values. By selecting (Skrá nýtt kort) button opens a new window, Staðfestingar gluggi (Figure 13).

Here displays information as name of the player, gender, number of boards, tricks and total tricks. In Confirm window boards' number are calculated from selected radio button. If woman has been selected the board counter goes up for next round each time that players has seven tricks or more. Also if man is selected the board number goes down. This information can be compared against player's scorecard.

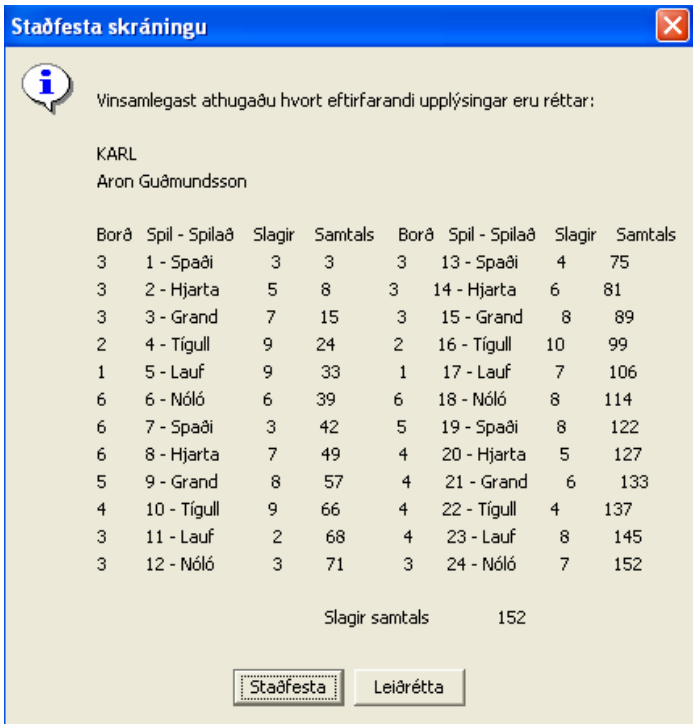


Figure 13 – Staðfestingar gluggi

In this window, `Staðfestingar gluggi`, are also two buttons, (`Leiðrétta`) and (`Staðfesta`). If (`Leiðrétta`) is selected, window close and `Skráning korta` window opens with previous information. Here is possible to change inputted information. If (`Staðfesta`) button is selected in `Staðfestingar gluggi`, information are written in Cards table in the database, window close and new empty `Skráning korta` window displays. When all cards have been recorded the window is closed by using (`Hætta við`) button.

Next section in the menu is `Upplýsingar`. This section is information part of DEUCE. By choosing first pick `Kvöldlisti` a list displays. This list (`Figure 14a`) is in name order and display name of all players which are playing this night, gender and total score. In the title is the name of tournament and date of night.

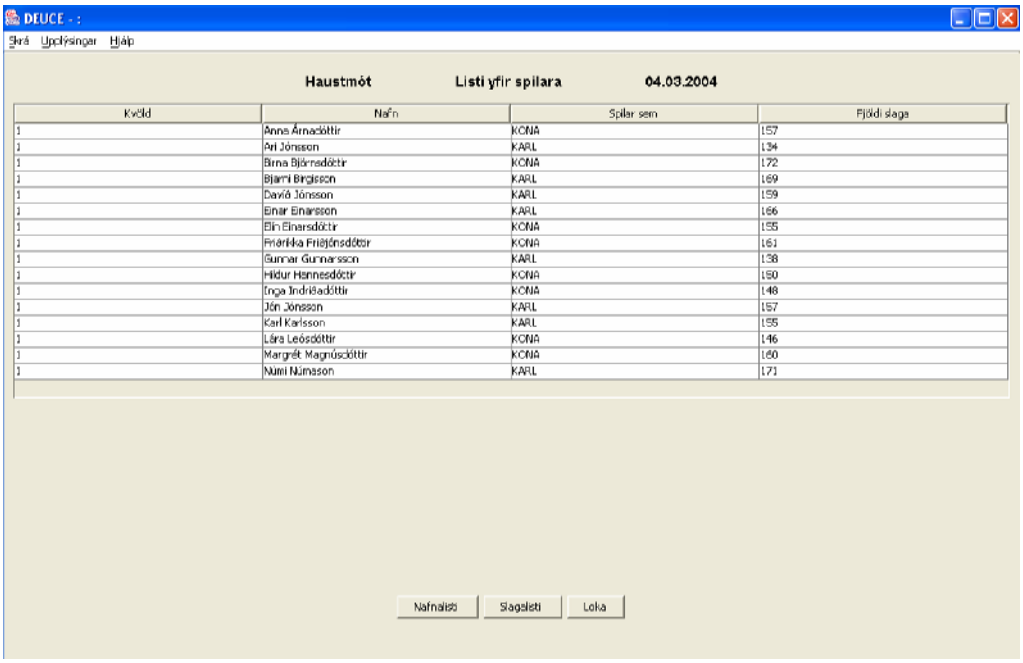


Figure 14a – Kvöldlisti – name order

This window has three buttons, (`Nafnalisti`), (`Slagalisti`) and (`Loka`). By selecting (`Loka`) this window will disappear. By selecting (`Slagalisti`) a new list will displays, ordered by tricks (`Figure 14b`). This list is used to see who has highest score and who has lowest score. (`Nafnalisti`) button displays the list in name order.

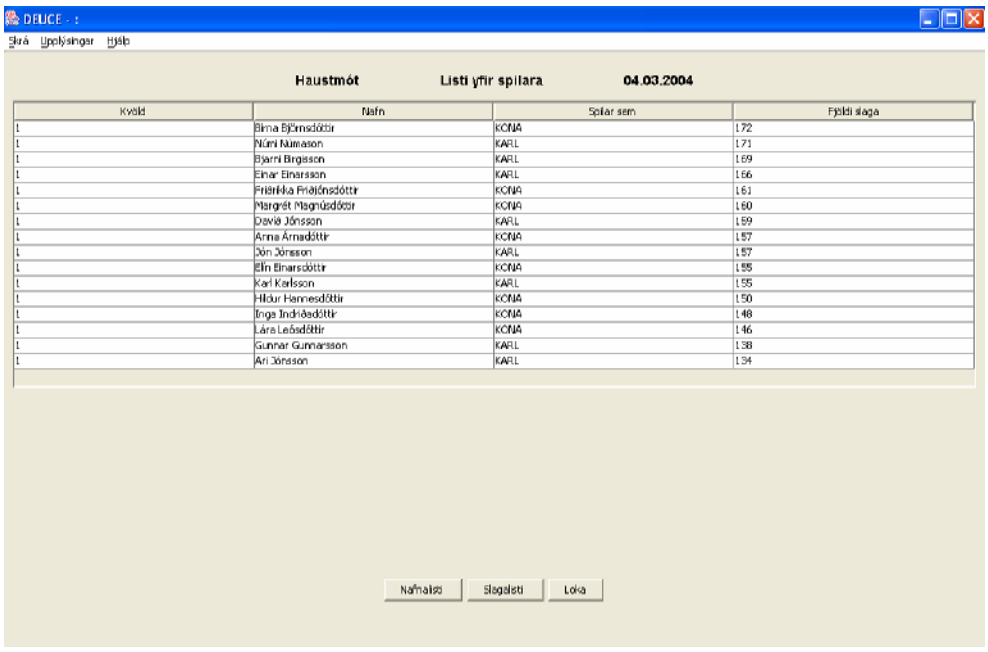


Figure 14b – Kvöldlisti – tricks order

Next pick in `Upplýsingar` section is `Mótaskrá` (`Figure 15`). This list displays all tournaments which have been filed in Places database table. This window has two buttons

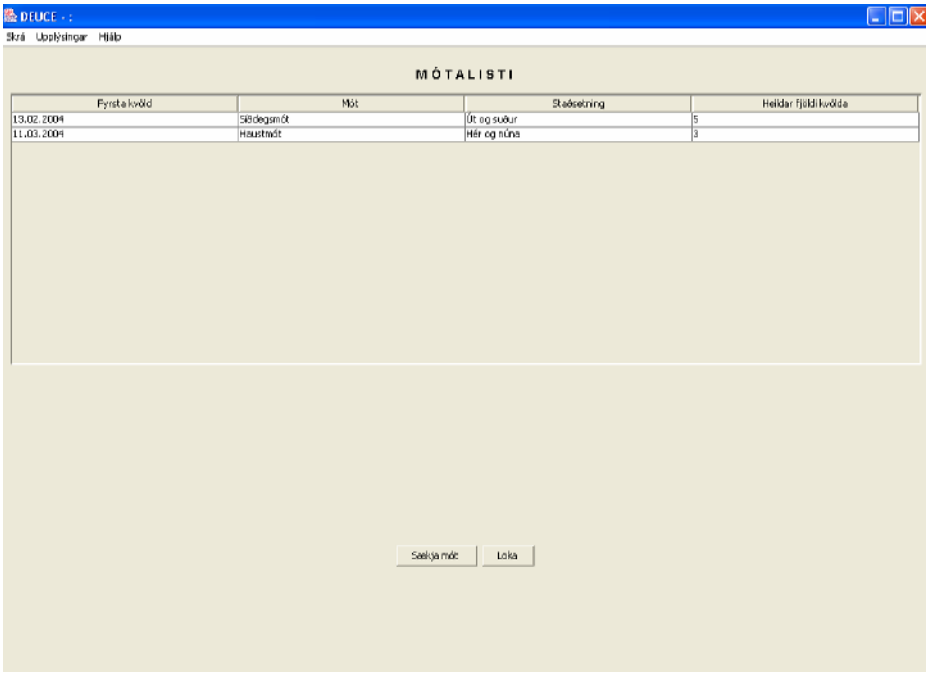


Figure 15 – Mótaskrá

(`Sækja mót`) and (`Loka`). (`Loka`) button close the window but (`Sækja mót`) opens `Sækja mót` window (`Figure 8`).

Figure 16 – Lesa saman kort

The last pick in this section is `Lesa saman kort`. Here is main target of the software. `Lesa saman kort` window (`Figure 16`) shows total tricks for each player in each round. It also shows at which board each player was in each round and name and gender of the player. Column in this list (and also other) can be moved as if user like to have board number and tricks together that's easy. This window has four buttons, (`Upplýsingar`), (`Uppfæra lista`), (`Leiðrétta`) and (`Loka`). (`Loka`) button has always the same function i.e. it

Figure 17 – Tölulegar upplýsingar

close the window. The first button (`Upplýsingar`) displays some numerical information (`Figure 17`) as total players, number of boards, highest score and lowest score. Next button (`Uppfæra lista`) is used to update the list if new tournament is selected or some data has been corrected.

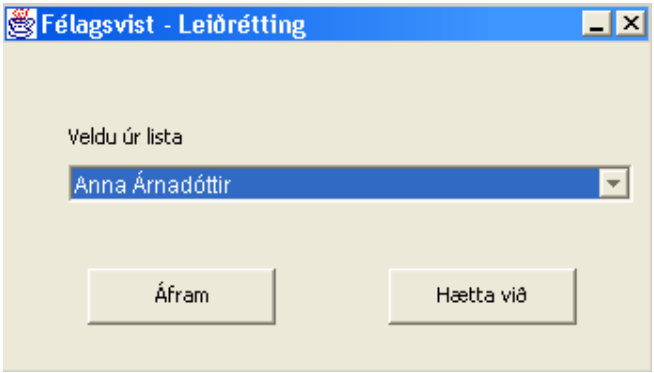


Figure 18 – Leiðrétting

(Leiðrétta) button is used to correct inputted data. When this button is selected then opens a new window Leiðrétting (Figure 18) where user is asked to pick players name on the card which should be corrected by choosing name from a name ordered list. This window has this familiar buttons, (Áfram) and (Hætta við) which goes to next step or close the window.

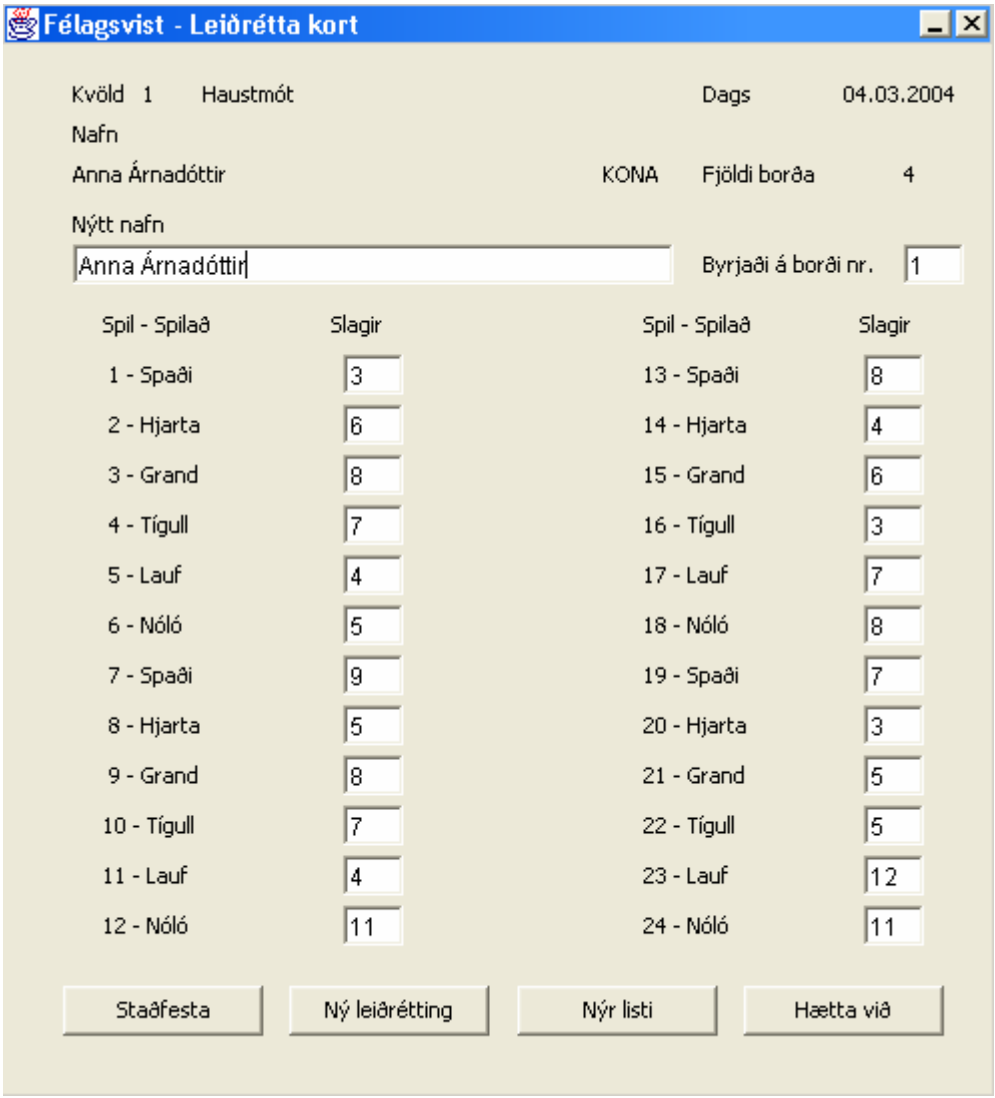


Figure 19 – Leiðrétta korta

Next step opens Leiðrétta kort window (Figure 19). This window displays both information and has some fields where user can made changes. This window has four buttons, (Staðfesta), (Ný leiðrétting), (Nýr listi) and (Hætta við). By using (Hætta við) button the window close. (Nýr listi) button update previous list and (Ný leiðrétting) opens Leiðrétting windows. (Staðfesta) button opens confirm

window similar and in `Skráning korta` (`Figure 20`).

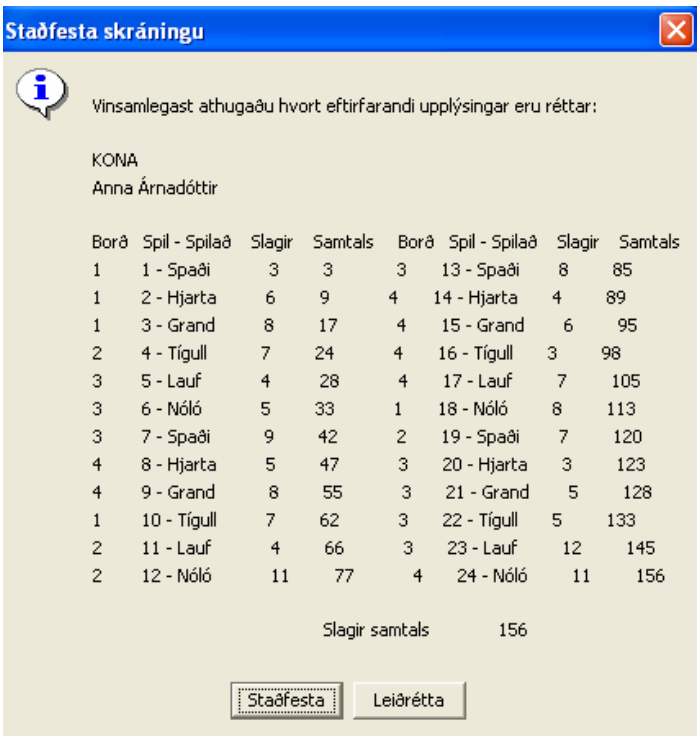


Figure 20 – Staðfesta

The last selection in menu window is `Hjálp`. In this selection are two possibilities, `Upplýsingar um DEUCE` (`Figure 21`) and `Aðstoð`. `Upplýsingar um DEUCE` displays information of DEUCE and `Aðstoð` is users help.

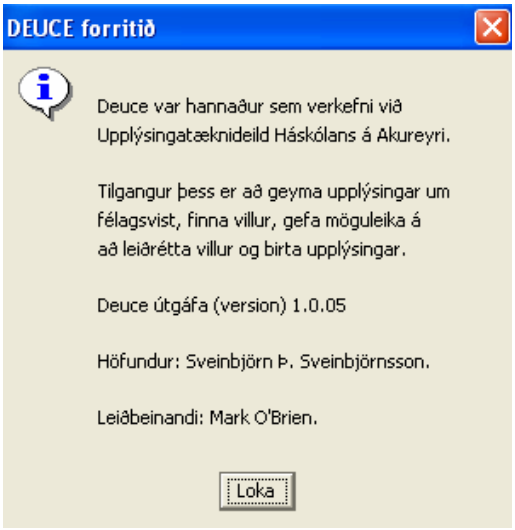


Figure 21 – DEUCE upplýsingar

Related work

Although the idea of computerise whist drive is my own, there could be another similar software. After spending some days scanning the Internet no such systems were found. There were a lot of programs on the Internet where you could play against the computer, offline or online, but there were no software to keep information of players, where a tournament is held, numbers of tricks or spot errors on scorecards.

Design

From a high level point of view the system comprises of three separate layers. These three layers are called Presentation layer, Engine layer and Database layer, (Figure 22). The main purpose for dividing the structure up is to make it more manageable and each layer independent. Each layer can be worked on separately from the other two providing that the layers are well defined and cohesive. This structure makes the system easier to maintain, it has the possibility to update or replace just one layer.

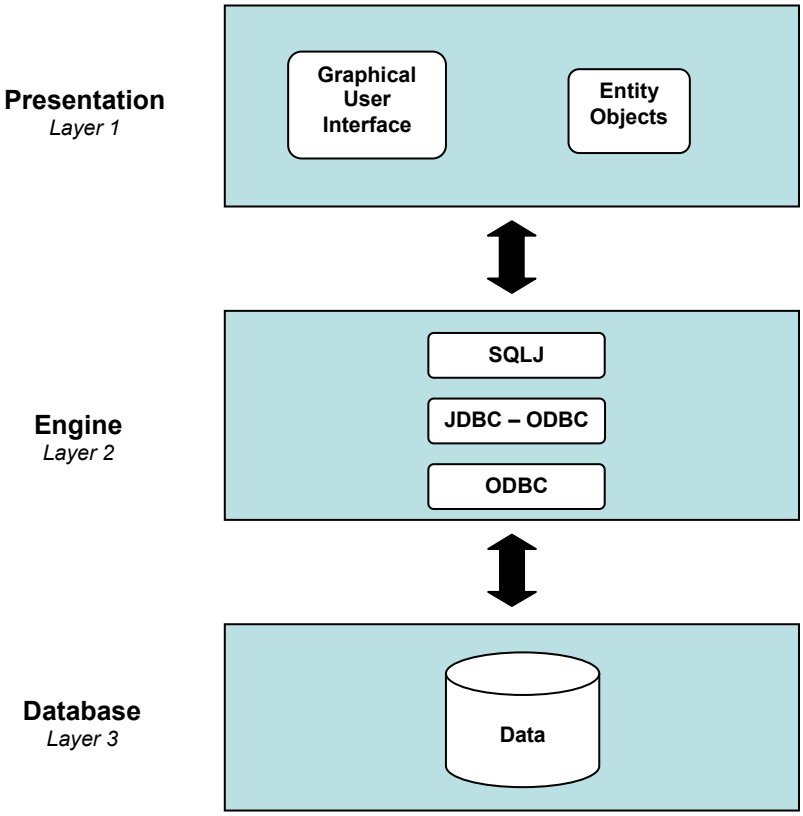


Figure 22 – System architecture.

The Presentation layer sits on top and contains all GUI classes and manages all interaction with the user. Entity objects are created by this layer. In the middle is the Engine layer that handles the connection between the GUI and the Database, loading drivers and running SQL queries. Under this is the Database layer which contains the database that stores all data, as well as making sure all data is valid.

Presentation (Layer 1)

The DEUCE software will use the Java Swing package for creating graphical user interfaces (GUIs). Swing allows the creation of sophisticated user interfaces quickly and effectively. The GUI will have clean and consistent look and feel. Menus will be uniform throughout the program. Storyboards have been created to outline the design of the GUI. Examples of these storyboards are shown in Appendix D.

Engine (Layer 2)

The Engine layer has three different main functionalities. From the image above (`Figure 22`) these main functionalities are named "SQLJ", "JDBC – ODBC" and "ODBC". The "SQLJ" includes SQL statements, surrounded by Java code, to query the database. This is accomplished by creating objects, from a special Java class collection, that take SQL statements as parameters. These objects are then used on the database to run queries. Secondly, the "JDBC – ODBC" indicates the loading of a driver. In this case a driver provided free from Sun called *JDBC-ODBC Bridge* is used to partly establish a connection to the database. Finally, the "ODBC" is the latter part of the connection to the database. Here it is required to set up an ODBC driver associated with a name (datasource) and a database, on the computer using the DEUCE system.

Database (Layer 3)

The Database Management System used is Microsoft Access. Only the system administrator has access to make changes to the database. Administrator or someone with permission can fill in data but everybody have access to information. The database is in Boyce Codd Normal Form, meaning that all non-key attributes are fully functionally dependent on the key, and no transitive functional dependencies apply.
The database is designed allowing for maximum flexibility in data input. No limit is on the number of nights and players. Figures 23 to 26 are screen dump of database tables.

Places : Table

FirstNight	TourName	WhereName	TotalNight
11.03.2004	Haustmót	Hér og núna	3
13.02.2004	Síðdegsmót	Út og suður	5

Figure 23 – Place table

Nights : Table

TourName	ToDay	NumberNight	NumberOfPlayers	Tables
Haustmót	04.03.2004	1	16	4
Síðdegsmót	12.04.2004	1	12	3
Haustmót	10.03.2004	2	4	1
Haustmót	12.12.2004	3	32	8

Figure 24 – Nights table

Players : Table

TourName	NightNumber	Name	Address	IdNumber
Haustmót	1	Anna Árnadóttir		
Haustmót	1	Birna Björnsdóttir		
Haustmót	1	Ari Jónsson		
Haustmót	1	Bjarni Birgisson		
Haustmót	1	Elín Einarsdóttir		
Haustmót	1	Friðrikka Friðjónsdóttir		
Haustmót	1	Einar Einarsson		
Haustmót	1	Davíð Jónsson		
Haustmót	1	Hildur Hannesdóttir		
Haustmót	1	Inga Indriðadóttir		
Haustmót	1	Gunnar Gunnarsson		
Haustmót	1	Jón Jónsson		
Haustmót	1	Lára Leósdóttir		
Haustmót	1	Margrét Magnúsdóttir		
Haustmót	1	Karl Karlsson		
Haustmót	1	Númi Númason		
Haustmót	2	Þóra Þórisdóttir		
Haustmót	3	Aron Guðmundsson	Vestursiðu 16	AIG

Figure 25 – Players table

Cards : Table

TourName	NightNumber	Name	Gender	Sp1b	Sp1s	Sp2b	Sp2s
Haustmót	1	Anna Árnadóttir	KONA	1	3	1	6
Haustmót	1	Birna Björnsdóttir	KONA	1	10	2	5
Haustmót	1	Ari Jónsson	KARL	1	3	1	7
Haustmót	1	Bjarni Birgisson	KARL	1	10	4	6
Haustmót	1	Elín Einarsdóttir	KONA	2	7	3	5
Haustmót	1	Friðrikka Friðjónsdóttir	KONA	2	6	2	8
Haustmót	1	Einar Einarsson	KARL	2	7	1	6
Haustmót	1	Davíð Jónsson	KARL	2	6	2	5
Haustmót	1	Hildur Hannesdóttir	KONA	3	4	3	8
Haustmót	1	Inga Indriðadóttir	KONA	3	9	4	7
Haustmót	1	Gunnar Gunnarsson	KARL	3	4	3	5
Haustmót	1	Jón Jónsson	KARL	3	9	2	8
Haustmót	1	Lára Leósdóttir	KONA	4	5	4	6
Haustmót	1	Margrét Magnúsdóttir	KONA	4	8	1	7
Haustmót	1	Karl Karlsson	KARL	4	5	4	7
Haustmót	1	Númi Númason	KARL	4	8	3	8
Haustmót	2	Númi Númason	KARL	1	1	1	5
Haustmót	2	Karl Karlsson	KARL	1	3	1	5
Haustmót	2	Margrét Magnúsdóttir	KONA	1	3	1	3
Haustmót	2	Þóra Þórisdóttir	KONA	1	9	1	3

Figure 26 – Cards table

To make the interface Java swing is used and windows look and feel.

Implementation

Development Tools

DEUC was developed on DELL Latitude D800 Notebook computer with

- Mobile Intel Pentium M Processor at 1.6GHz
- 512 MB RAM
- Windows XP Professional operating system

The programming language used was Java. The development environment used was JCreator 2.5 LE from Xinox Software running JDK 1.3.1 for all Java coding. The student followed the Java Code Conventions from Sun Microsystems.

The database management system used was Microsoft Access XP.

Java Development Kit

The Java Development Kit 1.3.1 can be downloaded from http://java.sun.com/j2se/1.3/download.html where an installation package is available for almost all platforms. The site also holds all documentation and installation instructions.

JCreator

JCreator is an integrated development environment (IDE) which can be downloaded for free at http://www.jcreator.com. This editor does not require any special settings to simply edit and compile the source code. The only requirement is that all the classes are within the same directory.

Microsoft Access

MS Access is a commercial database management program. It has a graphical user interface for creating and manipulating database tables. More information about Microsoft Access can be found at http://www.microsoft.com/office/access/evaluation/default.asp.

Microsoft FrontPage

MS FrontPage is a Hypertext Markup Language (HTML) editor. It allows direct manipulation of text and graphics as well as a "WYSIWYG" interface. More information can be found at http://www.microsoft.com/frontpage/evaluation/guide.htm.

Evaluation

DEUCE has been tested by changing input values. While writing this report, all ideas which popped up were tried and if bugs were found, they were fixed. An example of an error is that when `Kvöldlisti` was chosen all names in the first night of all tournaments was displayed. This error happened because when gathering information form the database only night number was used in the where clause. It was fixed by added tournament name in the where cause. Another example of error is that when the confirm window was displayed after filling out the card window, the boards number didn't change right. That was solved by changing gender back to zero after writing information in confirm window to database. Also I had to redesign windows and their functionality in some cases. More confirm windows and error message windows should be a good idea. The software was tried against real data. A whist drive with 16 players was evaluated both by using hands and by using DEUCE (`Figure 27`).

The time is minutes		
	Calculator	DEUCE
Writing names	0	10
Filled in tricks / calculated	6	8
Recalculated	5	3
Comparing together	97	5
Total time	108	26

Figure 27 – Evaluated

As shown it took 26 minutes to fill in minimum information and compare cards by using DEUCE but using calculator (the old way) it took 108 minutes to do same thing.
Problems and not fixed errors found in these tests are shown in Appendix E.

Epilogue

I didn't receive any technical assistance while writing this program. At this point DEUCE works almost as expected. I have tried DEUCE with real information which included errors. The result was super. It took much less time to use DEUCE than calculator.

At this moment DEUCE is not finished. There are a lot of possibilities to expand it. As example DEUCE lists all rounds and boards so it is always possible to see who each player is playing against. In this moment the user has to scan this list, compare and spot errors. Next step is to make this scanning automatic. It will also be good idea to add more confirmation windows and error checking, but it depends on how DEUCE will be increased.
DEUCE is designed to run on one computer. This program has many possibilities to be expanded in the future and the plan is to do so.

Bibliography

ANON 2004. *W3Schools*. Refsnes Data. Available at [online]
Available at: <URL: http://www.w3schools.com> [Accessed 15 April 2004]

ANON 2004. J2SE v 1.3.1 Documentation. Sun Microsystems, Inc. Available at [online]
Available at: <URL: http://java.sun.com/j2se/1.3/download.html > [Accessed 15 April 2004].

ANON 2002. JCreator. Xinox Software. Available at [online]
Available at: <URL: http://jcreator.com> [Accessed 15 April 2004].

Glossary

A Whist Drive	A social gathering game played by cards with certain rules.
DEUCE	The name of the software system, which is writing.
JDBC	Java Database Connecttivity**.**
Microsoft Access	A Microsoft Database Management System.
ODBC	Open Database Connectivity.
Round	One round is when four people are sitting around a board and playing cards. Playing cards are taken and deals, each person have 13 cards and when all cards have been used, the round is finished.
SQL	Standard Query Language.
SQLJ	SQL-Java, regular Java code and embedded SQL statements according to a set of rules.
Trick	When playing in whist drive, four cards are one trick.
Scorecard	A form where score are added on (in whist drive tricks).

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Appendix F

DEUCE

Owner's manual / Help