

## **Child Development Tracking Database System (ages 5-8)**

Thesis proposal

For the degree of Master of Science in Computer Science

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**Major-Field Approval** – The advisor and the department chairperson

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Advisor

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Date

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Chairperson

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***A. Title***

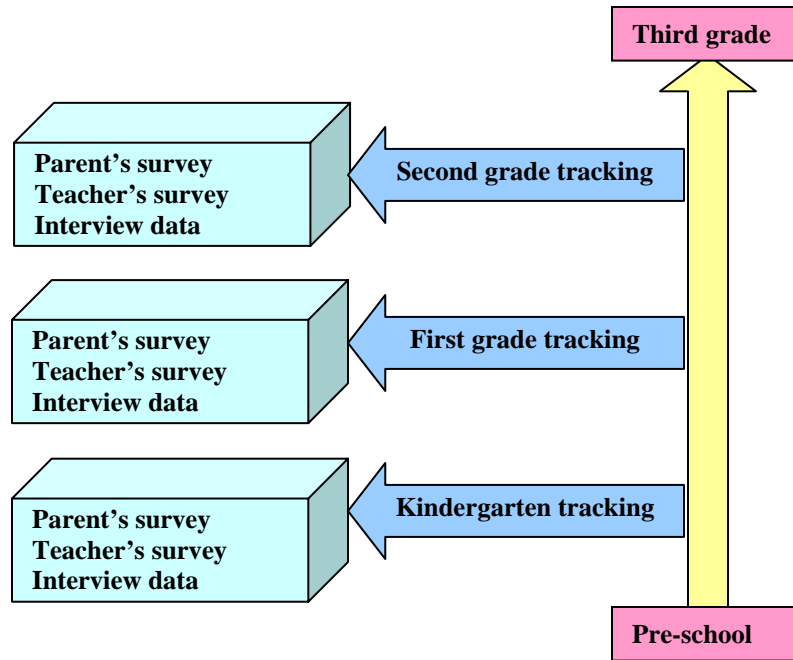
Child Development Tracking Database System (ages 5-8)

***B. Statement of Purpose***

Even rather young, children can experience stress and stress-related problems. This is especially the case during the transitional period while entering elementary school. At this age, first graders might encounter obstacles in the development of language and social skills. In cases when the skills are not developed, there is a need to intervene and provide help to the needy child.

To address this issue, Yale child Study Research Group has proposed a project and received a research grant for studying child development in children ages 5-8. According to the grant design, a group of 1000 children from the Greater New Haven area will be selected and tracked from kindergarten to the second grade. The children will be chosen randomly from birth records at the State of Connecticut Department of Public Health. Children who are especially likely to have developmental delays are not going to be included in the project. The parents of the participating children will be asked to complete an annual survey about their child's social-emotional problems and competencies, language skills, as well as family life. Another survey will be sent to the classroom teacher of each child with parental permission. The teachers' survey will focus on the child's development in the classroom, while the parent's one will provide more insight from the family point of view. Moreover, after receiving the parent's survey, every selected child will be scheduled for an interview with a professional child study researcher. The project is expected to track children for three years, starting with their last

kindergarten year, and ending at the second year at school. The project timeline is shown in the following figure (Figure 1).



**Figure 1. Child Development Project**

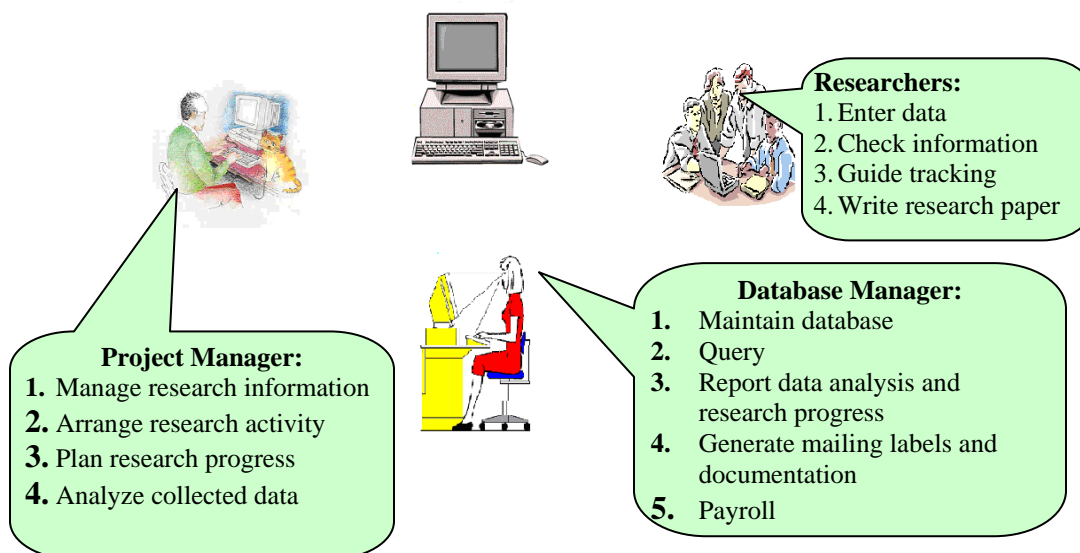
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This child study project is a rather large, long-term project, which includes the management of the grant process, the management of general and tracking information about the study objects. Tracking information is an essential part of this project and it requires special attention. The information is expected to grow in size, and it will be updated on daily basis. In this Child Development Tracking Database System (CDTDS), we are going to develop an independent tracking database management system that will automate and in turn, improve the tracking process. This system will offer an economic and effective way to hold this kind of tracking information, provide an easy way to enter and view data, and present users with user-friendly summary report and search tools.

Researches will be able to retrieve variety of information and generate a number of visual reports depending on their needs.

The database system will be utilized by three categories of users (see Figure 2):

- *Project Managers:* will use the system to arrange the research activity, plan the data collection process, manage the research information, and finally perform critical analysis of collected data.
- *Research Assistants:* will use this system to participate in data collection process, enter the collected data and tracking information into the system, perform continuous data consistency checks, and finally perform research related queries on the stored data.
- *Database System Administrators:* will carry out regular maintenance of the system; execute requested queries against the data stored in the system, produce research reports that will include data analysis and progress of the project. They will also participate in the survey process by generating surveys' documentation and mailing labels.



**Figure 2. User Categories of Child Development Database System**

***C. Literature Review And Current State – Of – The Art***

Given the today's expansion of computer technology, the database systems are becoming more affordable and easy to use. Children documentation and paper file folders are increasingly substituted by their electronic equivalent. Child development professionals can perform their research activities faster and with larger information pool. Institutions and individuals are starting to develop research and tracking database systems. This review will present a number of such systems.

Joe Pinsonneault (n.d.) designed several database systems for Early Childhood (ages 0-6) Education Specialist Consultation. One of the systems; "The Data Base Management and Reporting System" in conjunction with the "Child Development Assessment Tool and Outcomes Measurement Data Collection Forms", will enable programs to collect and analyze data, and generate reports indicating the developmental growth of individual children and the program as a whole. Another system; "Child Development Outcomes Measurement" utilizes multiple sources of information to collect data and support the measurement of a child's developmental progress.

Connecticut's State Department of Education has recently launched the "Student Identifier Database" (CHDI.org, n.d.), a new child tracking system that captures data on students from kindergarten through the 12<sup>th</sup> grade, and serves as a rich child-level dataset for planning and research purposes as a part of "Early Childhood DataCONNECTIONS" tracking program. DataCONNECTIONS program is currently assessing the feasibility of including data on young children (0-8) in the tracking database and developing a long-range plan for enhancing the early childhood components of the database. The database

will be used for planning purposes concerning: early care and education supply, demand, access and education workforce – compensation, benefits, qualifications and turnover.

The Harvard Family Research Project (HFRP) Out-of-School Time (OST) Program Evaluation Database is a compilation of evaluations of OST programs and initiatives written by HFRP (Harvard Family Research Project, n.d.). It provides accessible information about evaluation work of both large and small Out-Of-School-Time programs to support the development of high quality evaluations and programs in the out-of-school time field.

Our Child Development Tracking Database System (ages 5-8) continues efforts in the direction of child development data collection and tracking, together with the development of automatic report and planning tools. The details about the proposed project are given in the next section.

#### ***D. Methodology***

As mentioned earlier, our database system will be used to follow a number of selected children from their pre-school year to the second grade. The system will also be used to manage the collected information and monitor the data collection process. Researchers can then use the system to proceed with their research activities by means of extracting information, generating statistical reports, and planning and follow-up activities. The system will also be used to help the project logistics such as: performing project payroll, producing mailing labels and documentations, keeping track of participants and project personnel time sheets. Finally, the system will be used in the research analysis and in the development of the final conclusions and recommendations.

The technology used in this project will be based on the *Microsoft Access* database software together with the help of *Microsoft Visual Basic* for form generation. *Microsoft Access* includes tools such as query and report wizard, that help a user to navigate through a rather complex process of query/report generation, by providing a list of initial questions to be answered by the user. Once the questions are answered, the wizard will execute the required sequence of commands specified by the user's answers. Once the database system is established, *Microsoft Word Mail Merge Helper* can be used to produce multiple documents with the same content but different addresses. The address will be re pooled from the *Microsoft Access* database.

Any user of the system will be asked to provide a unique password before accessing the database. All the users share this password. The sensitive parts of the database will have additional username/password combinations. The first menu (Main\_Menu) that will be shown to the authorized users is depicted in Figure 3.

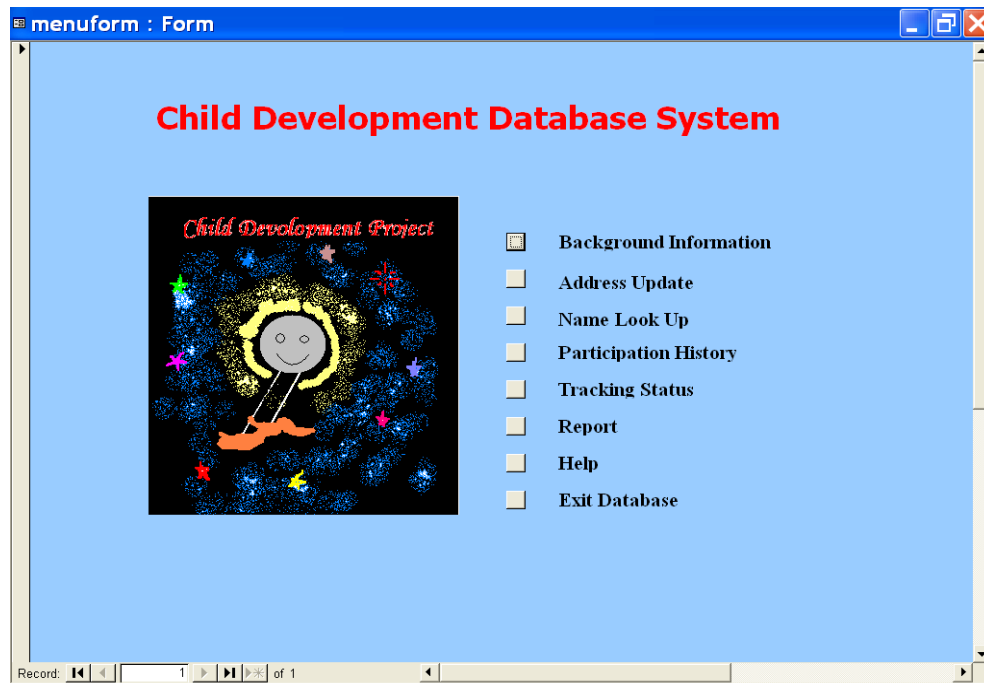
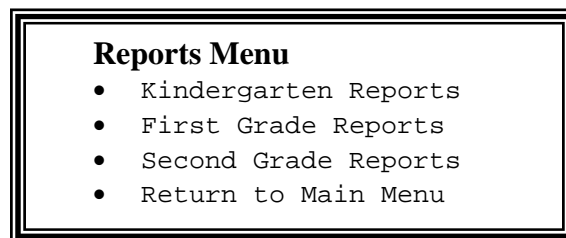


Figure 3. Main\_Menu

The `Main_Menu` provides users with a selection of submenus. Currently the submenus included within the `Main_Menu` are:

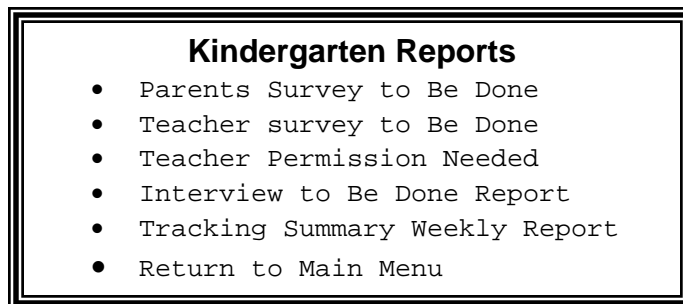
- `Background Information`: This submenu leads to a form, which contains child's personal information such as: birthday, family members and current contact information.
- `Address Update`: This submenu leads to a form used update family mailing address and/or phone number.
- `Name Lookup`: This submenu leads to a form that contains lists of all children participation in the project. User can search names by typing a number of first last name characters, or just by simply scrolling down the names' list.
- `Participation History`: This submenu leads to a form that contains three years participation status information; such as information about parents and teachers survey completion.
- `Tracking Status`: This submenu links to a case ID. The case ID is based on the participating family. The information that can be obtained from this form includes: survey mailing information, received information, interview schedules, completion status, payments etc.
- `Reports`: This submenu links to the `Reports Menu` screen that is shown in Figure 4.



**Figure 4. Reports Menu**

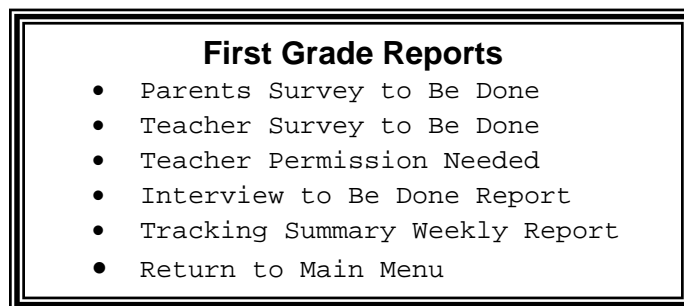
In our database system design, the generation of reports play very important role. Every week, there is a planned project meeting that will be used for discussions about the project's progress and future steps. The meeting participants will receive Weekly Report that will include summary information about all the aspects of the project, including the database system. Those Weekly reports will contain information about participants in Kindergarten, First and Second grade.

The Kindergarten reports submenu leads to a Kindergarten Reports Menu form as depicted in Figure 5.



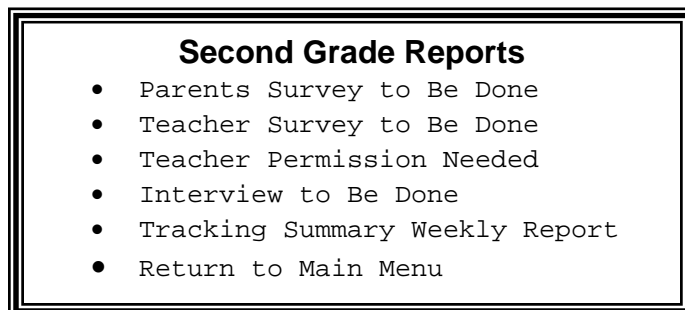
**Figure 5. Kindergarten Reports**

The First Grade reports submenu leads to a First Grade Reports Menu form as depicted in Figure 6.



**Figure 6. First Grade Reports Menu**

The Second Grade reports submenu leads to a First Grade Reports Menu form as depicted in Figure 7.



**Figure 7. Second Grade Reports Menu**

The reports related to information collected by parents' surveys will post under the Parent Survey to Be Done submenu. The same applies for the Teacher Survey to Be Done submenu. Information collected during interviews with children participants will be available in report format under the Interview to Be Done submenu.

Additional database system features:

This database system will enable researchers and the system managers to perform *query searches* related to the project. The queries might be related to the participants' data, project logistics, or database system maintenance.

This database system must provide adequate *information security* and assure subjects' personal *data privacy*.

***E. Contributions:***

The Child Development Tracking Database System is specifically tailored for a child development project done by Yale University Child Study Research Group. The

system will provide electronic medium for storing project data, and for generating research and maintenance reports. The database system is one of the first such systems that is fully integrated within a child development research projects. The project is also providing tracking capabilities that can be used for possible future projects in the child development research field.

The database system will provide user-friendly, convenient and reliable data storage and analysis tools and, help researchers with maintain the tracking information, automate the research process, and aid the research analysis.

#### ***F. References***

Prague, C.N., & Irwin, M.R. (1999) *Microsoft Access 2000 bible*, New York: John Wiley & Sons.

Date, C. J. (1999) *An Introduction to Database Systems (7<sup>th</sup> ed)*, Addison Wesley Longman.

Hart-Davis, Guy. (2000) *Mastering VBA 6*, Sybex International

Child Health and Development Institute of Connecticut, Inc (n.d.) Promoting *The Healthy development of children Throughout Connecticut*, retrieved July 2004 from <http://www.chdi.org/index.html>

The Research forum at the National Center for Children in Poverty (2003) *Research*

*Database*. Retrieved July 2004 from <http://www.researchforum.org/database.html>

Harvard Family Research Project (2004) *Harvard Family Research Project's Out-of-*

*School-Time Program Evaluation Database*. Retrieved July 2004. From

<http://gseweb.harvard.edu/hfrp/projects/afterschool/evaldatabase.html>