Functional Specifications for EI-ALSAA

1. Introduction

1.1 Overview

The system is a on line booking facility that allows members to enquire and book facilities within the sport complex such as sun beds, hall and room hire, squash and tennis courts which are just a few of the facilities provided within the sport complex. The on line booking system will also provide an opportunity for members to check the available of these facilities on a 24 / 7 bases and allow them to make payments for their booking while the complex is closed during non operational hours. The current booking system used by the sport's complex is paper based and the receptionist on duty administrates this system as bookings are made. The members need to be present while making a booking for the facilities they wish to use. However some inquiries can be made over the phone as to the availability of these facilities.

The new on line booking system will be required to provide a function were members can query the current availability of the required facilities within the complex, such as the ones mentioned above. The system will also need to provide a function for members to be able to book facilities and to be able to make payment through E commerce using credit cards, or a debit account system.
The new on line booking system will use the existing members database, in one of three ways

- The new system will interact with the existing ALSAA database to verify members in real time.
- The new system will have its own listing of members which is a replicate created from the current ALSAA database
- The new system will require members to sign up first before using the on line booking system, the new system will then forward details to the ALSAA database administrator for verification and at such time a new account will be initialised.

1.2 **Business Context**

The organisation that is interested in the on line booking system is an organisation called ALSAA which stands for Aer Lingus Social & Athletic Association which was created by the airport management and staff as their social club back in the early 1960's. The current location of the sport complex is on the old Dublin airport road, and was built in the late 80's and there is also a swimming pool complex located in the grounds of Dublin airport. The current membership of ALSAA is over 30, 000 active members who have the use of such facilities including ten pin bowling, football pitches, pitch and putt, baseball ground, rugby, GAA, hockey, gym, water suite, bar and restaurant and more. However regardless of the name ALSAA, the majority of its members are non-airport staff. The current building and facilities are owned by ALSAA, but the grounds and land on which the buildings are located are owned by Aer Rainta or Dublin airport authority as they are now called as of this year (2004).

1.3 **Glossary**

HTML

Short for ***H****yper****T****ext* ***M****arkup* ***L****anguage,* the authoring language used to create documents on the World Wide Web. HTML defines the structure and layout of a Web document by using a variety of tags and attributes.

PHP

PHP: Hypertext Preprocessor, an open source, server-side, HTML embedded scripting language used to create dynamic Web pages.

SQL

Structured Query Language, SQL is a standardized query language for requesting information from a database.

2. General Description

2.1 Product / System Functions

User functionality System

Firstly the user will have to download the E-ALSAA web Site through the Internet from whatever location they are at. When they have located the home page, they then must enter a password and username to give them access to the site and any transactions they wish to carry out. The objective is to make bookings or just view the bookings. When the password has been entered through a PHP form, it is submitted to a relational SQL database for verification of that particular user, in this case a member.

This database will have a record, relation of all members to allow transactions to happen and be verified. This database will also store information regarding further transactions.

Staff involvement with the system

Staff will also be given administration rights in the form of a password and username similar to the members. It is up to the system, using tables to represent staff, to distinguish which staff members has accessed the system and in particular the SQL database. The system for this access will be done also through a PHP form embedded into an html page.

Database transaction for members

Once a member has successfully entered the system they will now have entered the bookings pages of the system. The system is now ready for a member to make bookings executed through PHP coding. This functionality is a major functionality, as it has to interact with the database in real time as well as handling more than one member making a booking at the same time. Functionalities, which will take care of this, will be constructed through the coding of PHP. Members will be able to view bookings made previously and by

all members and make new bookings. For each facility been viewed by a member they will be presented with the times of the specific facility, when it is available and actually make that booking**.** The database will have to update and store all the features mentioned above. The facilities details times/availability will be stored in the database for read only purposes for the member (details of club changes will be made by staff with authorization). All functionality transactions such as a member checking a booking will be done through the database and returned to the member's web site in HTML/PHP format.

Database transactions for staff.

After the member has made entry to the system they themselves will be able to make bookings of the various facilities in the complex. The functionalities that staff will be given to the database will consist of administration mainly. Here the staff with access to the database will be able to change facility times, amount of members allowed to book an event at the same time, change event dates and which venues such as the main hall are available. All of this information will be stored in the database as facility relations and changes done through PHP/SQL coding.

GUI functionality for staff transactions.

This interface is were administration staff with access can view all transactions of the system database. Here staff can view, in the form of text reports, what has been happening in the system over a time frame. This interface will be constructed using java that will enable staff to access the database through a JDBC connection. The java part of this interface is used for the connection and result set of any queries the staff may have, such as how many members booked the sauna this week. Queries will be done through SQL in the front end (with the help of forms) of the GUI enabling the staff to enter basic queries most of which will have been embedded in the code once it has been determined exactly what information will generally be needed. This interface will be restricted to staff only and possibly located on a single PC just this purpose.

Web-interface functionality.

The main appearance of the web site will be done using HTML coding. Any forms text boxes or any part of this interface will be done using PHP. The main reason for using PHP like this is its usability and friendliness with SQL databases. A member can view this interface as a way of finding out what's going on in the club and when.

Credit card/debit accounts

This is an area to be worked out with the help of ALSAA management. The issue is to determine what method of payment would ALSAA like to provide their members. Debit accounts can be set were the member may pay through credit card transaction in certain multiples. Example could be that a multiple may be 20euro each transaction which in turn will allow that member to book any facility until their credit runs out. Another possibility is each booking is made and paid one time with a credit card.

2.2 User Characteristics and Objectives

The user community can be broken down into two definitions one been the members and the other been the staff. Firstly we will look at the staff / users who will administrate the on line booking system, and walk members / users through any problems they might have with using the new on line booking system. Understand the needs of the staff / users and the main objectives for the new system would involve a system that is totally automated and requires little of know interaction from the staff, as well as a system that can be queried to provide a reporting facility for management to view bookings over a given time period. The current staff are use to a computerised till system which is connected to the current ALSAA database to verify membership status. This till system is using a windows 98 platform at present, and has a visual basic interface. There is also a turnstile system in place that is used to check member's status through the use of a swipe cards system as they enter the sport complex. This system is monitored by the staff, but this system requires little interaction from them other

than over- riding the system to allow members to enter the complex if they forgotten their membership cards.

The member / user can also be broken down into two different categories such as single membership, and family membership. The single members categories would have a variety of jobs and careers and it would be difficult to know if they have any knowledge or understanding of the Internet, a PC or any software in general. However, the family members categories is more likely to have a member of the family that has used or is familiar with the internet, a PC or some type of software, but again we cannot be sure of this. Overall one thing we can be sure of is that the members who want to use the sun beds, tennis, squash courts would be leaning towards using this facility as it provides them with an advantages such as booking these facilities without having to enter the sport complex.

2.3 **Operational Scenarios**

Member login.

A member will be given a password and username for access to the online booking system. If the member enters the correct username and password they can enter the system, if they do not a message will appear on that page telling them they have entered the wrong details and try again.

Member checking existent bookings.

With successful entry the member is now in a position to check all of their existing bookings. They can do with the help of a drop-down box to compare a specific date that they have made a booking. When a date is picked the member will only receive their bookings for that date.

Member making Bookings.

Staff checking all club bookings

Staff checking all member transactions

The member will be given a range events and facilities to choice from. When the member has picked a specific facility they will then be presented with all the available times for the next week of this facility. If the member wishes to make a booking for this date and facility they can do so by clicking a radio button and selecting continue. From here they will receive a messages stating the booking has been made and can continue to make a further booking.

All members' bookings.

Here the member can check all booking made in a facility for the coming week. By clicking the club and a radio button specifying the day or days, they click continue to receive all bookings made by members.

Staff with administration rights will be able to view the database for member's names addresses and when membership is due. They will have specific access only in the form of username and password allowing only them to view this information. The staff will be asked to enter the members name ID through a php form retrieving the member's details. From this the staff will see the member and when they paid membership. A further check box will give the staff access to a member's transaction in that week. If the staff member get username password or member ID wrong they will be informed by the system and allowed to enter these details again.

With correct access staff can view clubs booking by clicking the club from a drop-down box and pressing continue. Here they will see all bookings made for that club and by which members.

Staff adding/deleting members.

Administration staff can add or delete members from the database on correct entry, password and username. Here limited administration staff will enter the database relation tables allowing them to add members or delete them. Members are required to login into the system initially so administration can set up a members account for that member for future us to the system.

Staff members and facilities reports

In the form of a JAVA GUI administration will be able to retrieve the database activity over a period of time. Here staff will enter queries into forms through the GUI, namely facility name and operation needed, could be sauna and amount this week. Other queries such as total usage of the pool can be retrieved, has to be determined during requirements stage. Generally staff will be given a simple format to follow using English keywords, in the form of check boxes and drop-down menus that the GUI will take and use SQL to retrieve that information.

Credit card/debit account

As mentioned this topic needs further discussion with ALSAA and for the purposes of completion of project credit card transactions may not be realistic in respect of the cost but essentially a member will have to log on every time they need to make a booking. Debit accounts were again using credit/card E-commerce technology we can provide and record bookings made. This would involve possibly using the database to record an account and update credit when appropriate.

2.4 **Constraints**

Below is a list of possible constraints placed upon the design team under which this project will to be developed.

Time constraints

The project has completion due date for DCU and this is the first two weeks of April 2005, and there may also be constraints regarding getting feed back from ALSAA.

Users requirement

Will we be able to understand and meet the needs of the end users requirements for the new system within the time frame.

Staff requirements

Will we be able to provide the staff with the tools, training and tested finished product within the time frame allocated to us by DCU.

Management's requirements

Will the system meet the Management expectations and will the new system have Management's full support.

Financial constraints

In order for the system to be fully integrated within the current daily work process, an investment will need to be made by ALSAA for the purchase of hardware, and software in order to fully implement the booking system.

3. Functional Requirements

3.1 User login

Description

The system must be aware of all member and staff username and passwords to distinguish the correct user login. It will be necessary to store all existing and new users in the database as a means of determining a login.

Criticality

This login is essential to the system for identification purposes. Without this function there will be no entry to the booking system. With this login a user may interact with the rest of the system. This login will also once entered show all transaction recorded by the system of a user to the administration staff when requested.

Technical issues

The main issues here are to make sure that each login is different and stored in the database correctly. Each login must also identify the correct facility member or staff member whose details are stored in the database.

Dependencies with other requirements

This is the main entry to the member restricted on-line booking system. Without this login there will be no entry to the system and with it the user has all access to all other features provided to the on-line booking system.

3.2 **Using the booking system / database for members / staff members**

Description

Here the member has gained access to the booking system. They now have the capability of making a booking, checking dates and times of available events and clubs. It is now up to the system to make the connection through the booking system and the database in a user-friendly fashion. As a requirement the member should only see the above mentioned while in real-time and when the member instructs a command such as make a booking, will the database be updated or information be retrieved to assist in users decisions.

Criticality

It is important that the correct information is retrieved from the database, such as times for the availability of the sauna. It also important that the database is updated to illustrate real transactions as they happen. The database should not be allowed to make two booking for the same event/club for two different members. The database should also be able to show the user/member a clear view of all available and made bookings for the dates requested.

Technical issues

The above can be accomplished by providing the user with clear options like dates/times as well as storing this correct information in the form of relations within the systems database schema. Correct coding will have to be done to work out the problem of double bookings as well overbooking.

Dependencies with other requirements

For the above requirement to take place the user must be provided with an interface that allows them to work their way through a transaction easily. Also for a transaction to be effective the database must receive the proper and up-to date information to carry out these transactions.

3.3 **Database transactions for administration staff**

Administration staff will be provided with a username password solely for the purposes of updating the system such as club times and dates. Once the web-interface has been update the database will if needed have to be change to match this. Also staff here will be given the task of adding new member's to the database schema as well as taking old members out who haven't rejoined over a certain period.

The aspect of facility times etc, is important as it represents what is actually happening and when in the complex. The members must be provided with up-to date information, which can be updated by administration staff. For the schema and purposes of the complex records, it is also important that the database holds current details of members so that queries are effective.

The main issue is the access to the site, which allows the staff to make the changes. The staff in question will be given the responsibility to change parts of the booking system (schema) such as the sauna times, dates, member details, so the right facilities for making these changes need to be put forward.
This functionality is for administration only although it should be pointed out that any errors would lead to wrong bookings being made.

3.4 **GUI functionality for staff transactions**

This functionality will be most likely done through one machine. Here the administration will access this interface through a login given them access to the members database. From here they can carry out specific queries, to be

determined, and print them of in the form of text report's, which will give them a view of how each facility and event is performing.

Technical issues

Criticality

This is an important feature, as the correct queries need to take place. The overall schema needs to be set up to allow these queries given the right representation of relations and how they interact with each other. The system can further be updated based on the output of these reports, e.g.: too many booking at one hour so limit bookings on that hour and make available other times.

All queries will be done through the java GUI so the correct query must be presented to the staff member carrying then out. The report must be presented in a way that staff can read and understand, they must be able to read in the report what they think their query means.

Dependencies with other requirements.

This interface will be directly interacting with the database through a JDBC connection. It is essential that the connection is made and that the connection can be made on request.

3.5 Web-interface functionality

Description

This is the main point of contact for the user to use the booking system. All database transaction will be embedded behind this interface using PHP. The interface itself should represent the complex itself. It will be constructed in a manner that will enable a user to use it quickly and effectively. The user should

always know what part of the booking system they are at and where they can go next if needed.

Criticality

It is crucial that this interface is easy to navigate as well as receiving the correct information. Any forms, checkboxes, drop-down, menus etc must represent exactly what the user requires and therefore carry out the correct transaction through the database.

Technical Issues

The interface will be developed using a usability model that should determine the users requirements, users goals and satisfaction. The objective is to develop a Human Computer Interface that will make the users time using it more enjoyable and efficient, such as memory retention.

Dependencies with other requirements

This is the first and main point of contact for the user. Everything the user wishes to do must be done through this interface. Any transaction, bookings or availability of bookings happen through this interface as well as distinguishing the complex's role to its member.

3.6 **Credit Card & Debit Account**

Description

Providing options were a member can make a booking and pay for it in real time. Using a credit card the member can make their booking in advance and have it paid for without any interaction with the complex other then their booking system. A further source of payment may be without using the credit card over the

booking system but with reception staff that will debit the members account directly. Technical issues for ALSAA.

Criticality

This feature could make a huge difference in how the members perceive the complex and the booking system. For them it takes away their paper-based environment in the system. It will have to be determined and discovered what is the best way to set this feature up.

Technical issues

There are many apparent, especially security, encryption support of software. It is important that the complex and its members are happy with using credit cards through the booking system.

Dependencies with other requirements

If this feature is accepted the system will have to update the members essentially debit account. How this will be done has not been decided but it should be clear that any member using such as feature will have to be recognized by the system, database and allowed to make a transaction will the system update their account.

** Next is the System Architecture Diagram **

4. **System Architecture Diagram**

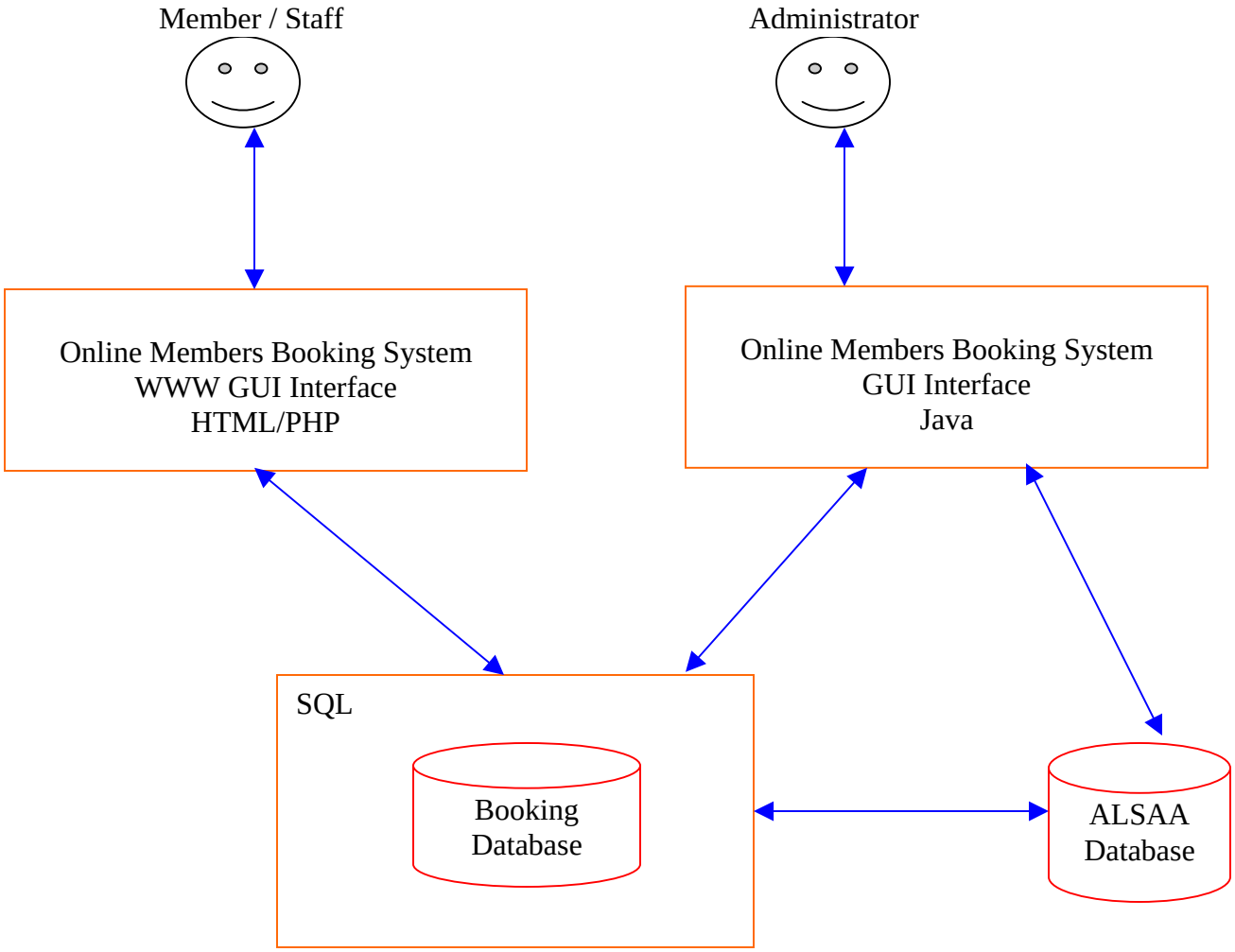


Figure A

5. **High-Level Design**

Here we provide a system model using SSADM tools to illustrate the over system and its external entities (context diagram) and present all of the systems data processes using a Data flow diagram.

Context diagram

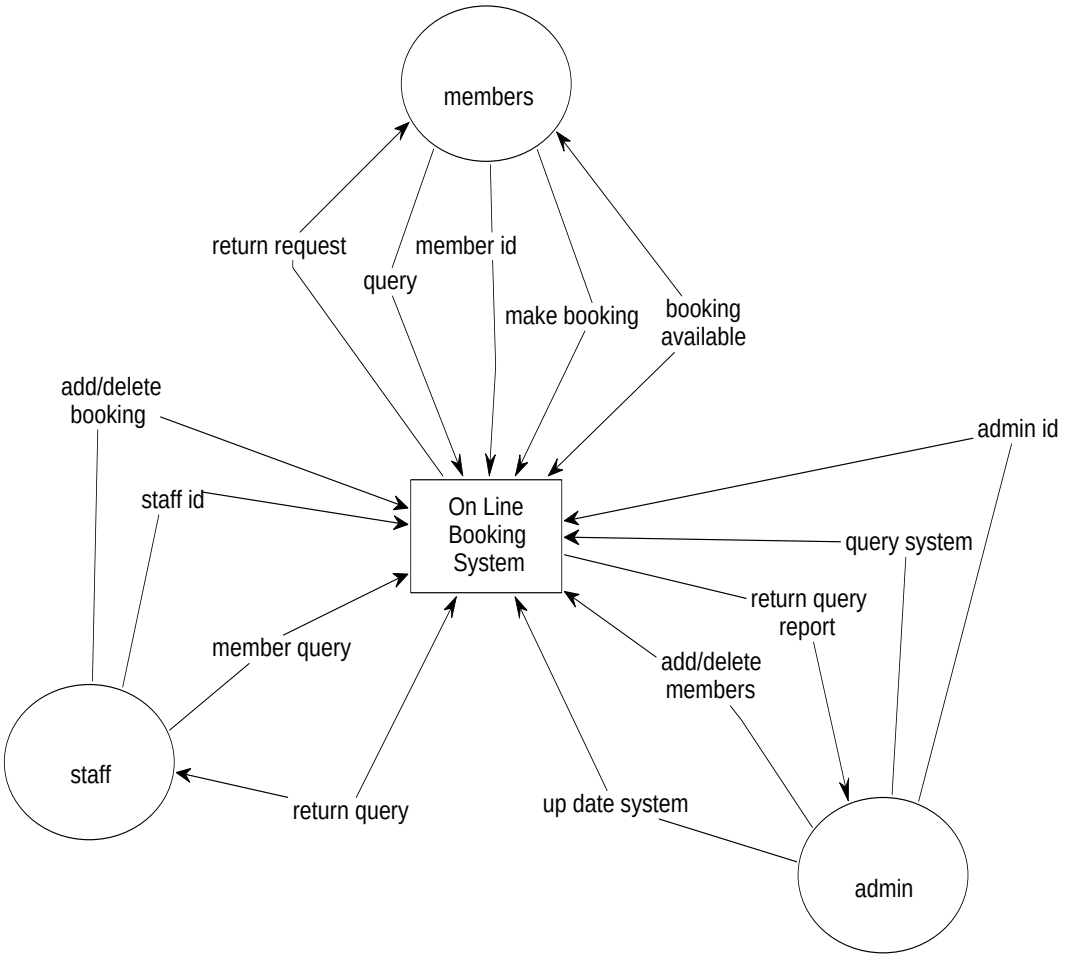
This diagram shows how the system interacts with its external entities to the system, members and staff, to show the follow of information between the system and these entities.

Data Flow Diagram

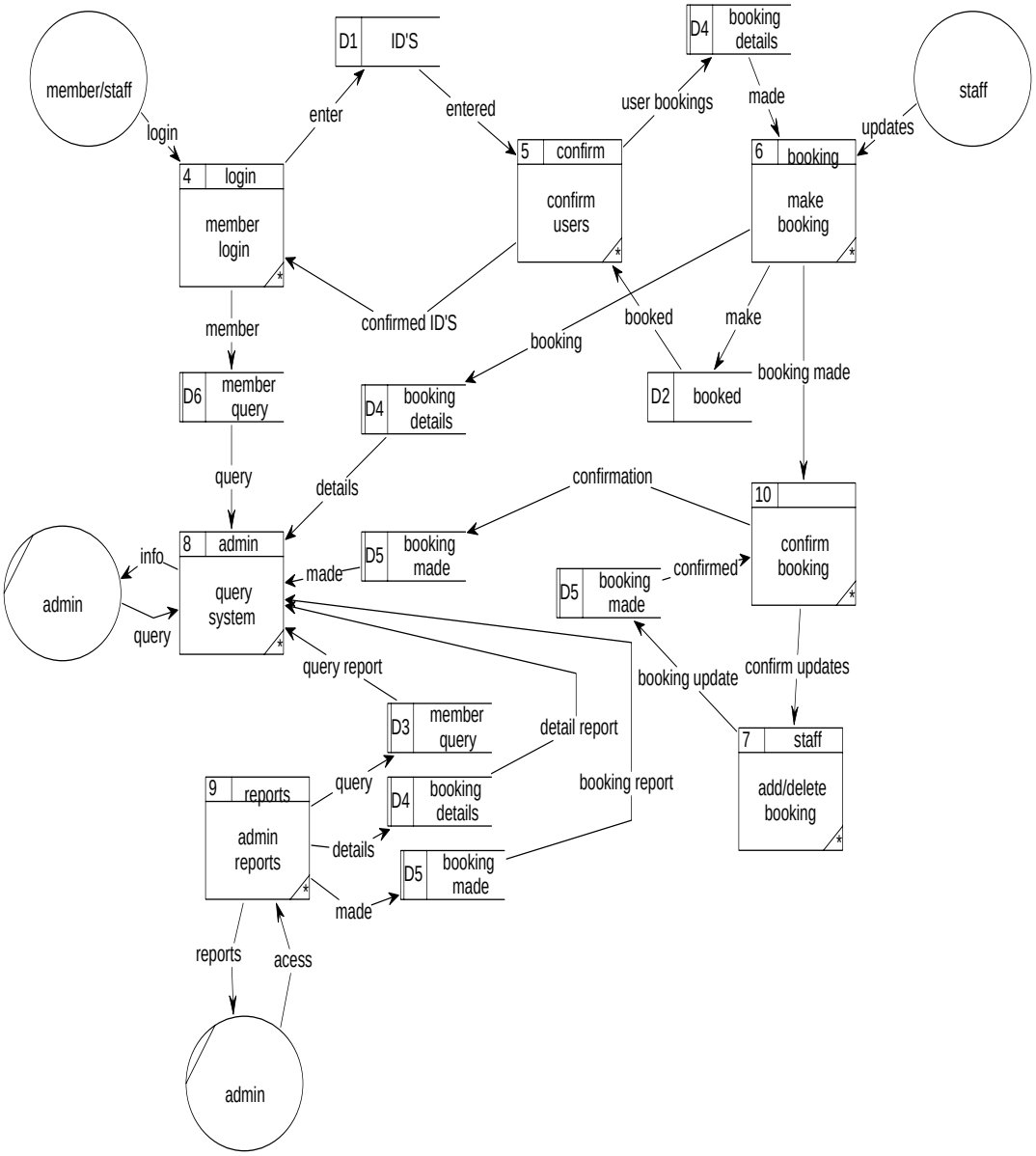
Here we want to provide the data movements of the system and show the functionality of the system. We supply the process of the system, its external entities ,the flow of data between these process and the data stores of same.

Logical Data System

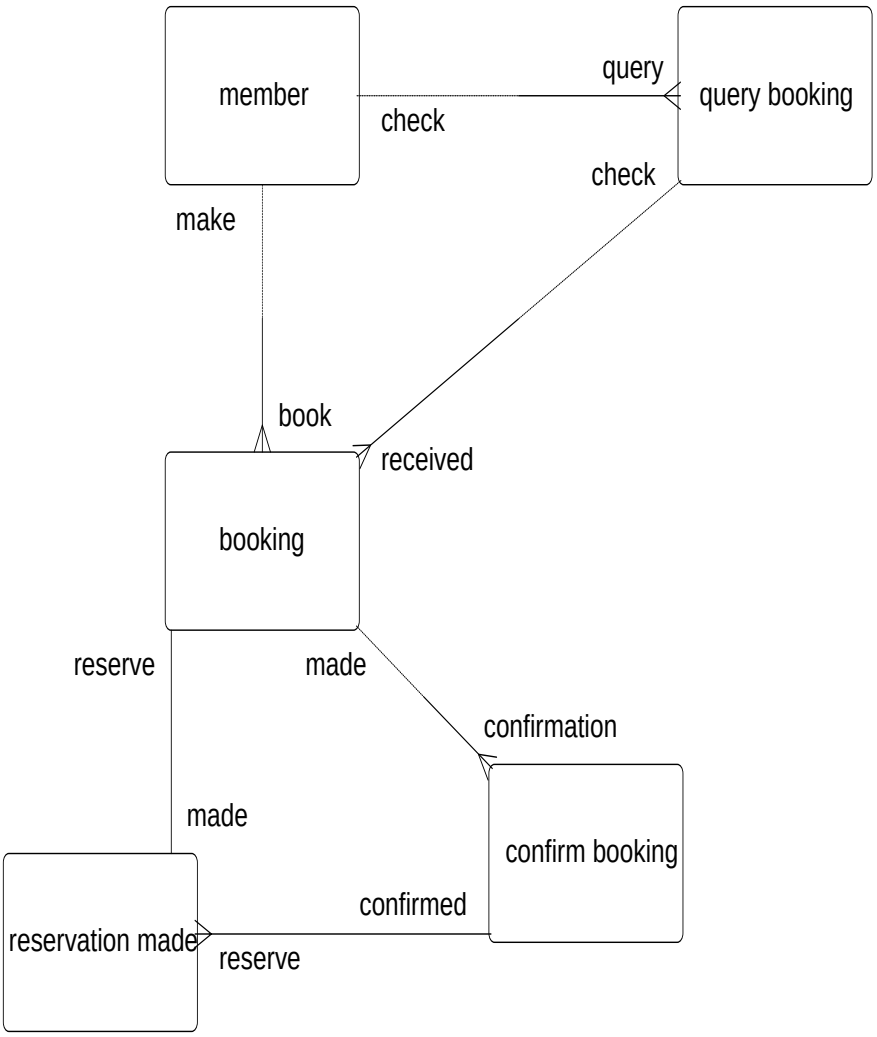
In this diagram we show an over view of how the members and the system with interact with each other through cardinalities.



Context Diagram for Alsaa OnLineBookingSystem



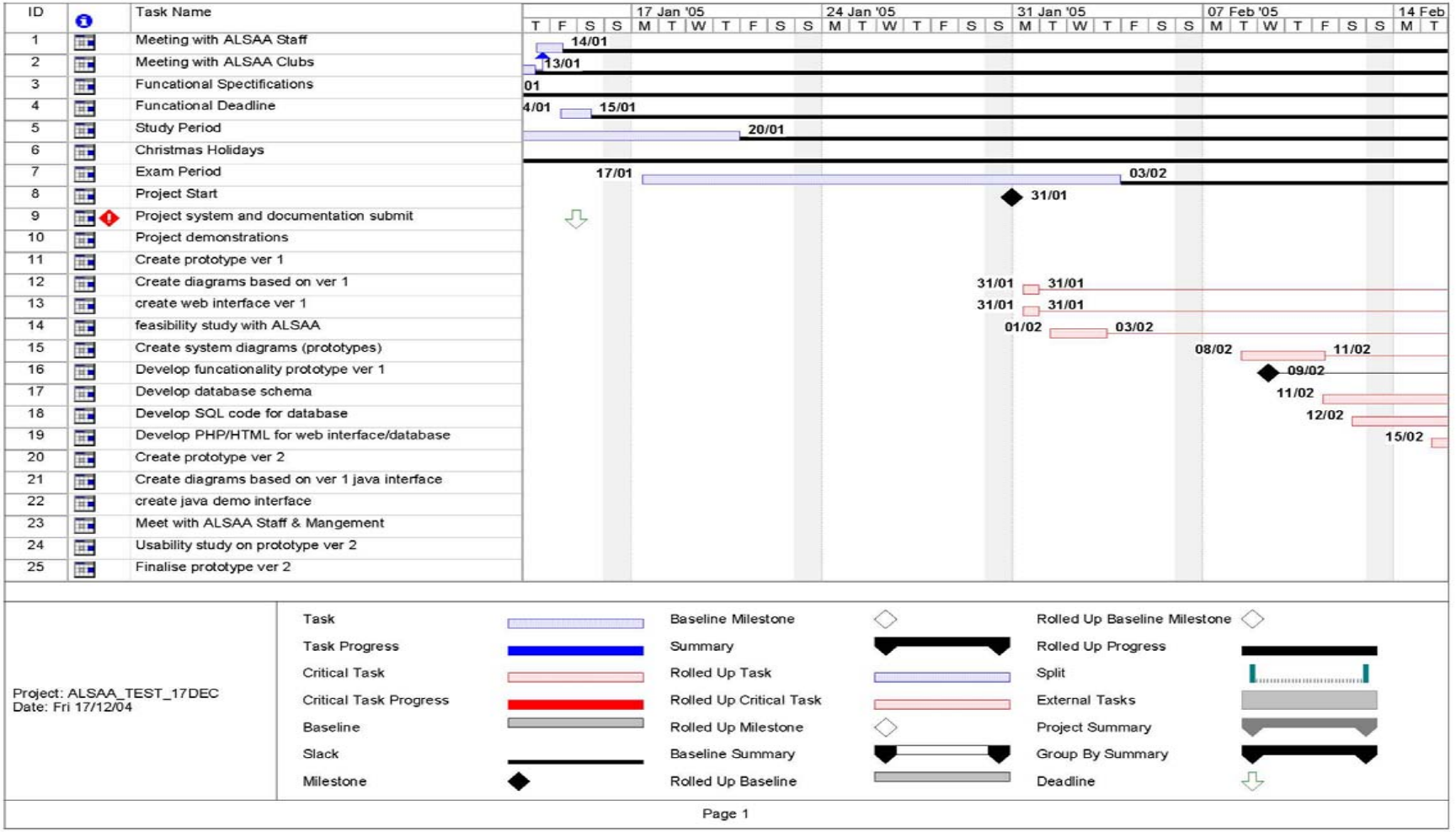
DFD for AlsaaOnLineBookingSystem



LDS for Alsaa OnLineBookingSystem / Members

6.**Preliminary Schedule**

This section provides an initial version of the project time line plan through the use of a Gantt chart, with the project tentative start and stop dates. The only software need for the development of this project is SQL, and space on a web server.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Task Name
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24 Jan '05
31 Jan '05
07 Feb '05
14 Feb
1 Meeting with ALSAA Staff
2 Meeting with ALSAA Clubs
3 Funcational Spectifications
4 Funcational Deadline
5 Study Period
6 Christmas Holidays
7 Exam Period
8 Project Start
9 Project system and documentation submit
10 Project demonstrations
11 Create prototype ver 1
12 Create diagrams based on ver 1
13 create web interface ver 1
14 feasibility study with ALSAA
15 Create system diagrams (prototypes)
16 Develop funcationality prototype ver 1
17 Develop database schema
18 Develop SQL code for database
19 Develop PHP/HTML for web interface/database
20 Create prototype ver 2
21 Create diagrams based on ver 1 java interface
22 create java demo interface
23 Meet with ALSAA Staff & Mangement
24 Usability study on prototype ver 2
25 Finalise prototype ver 2
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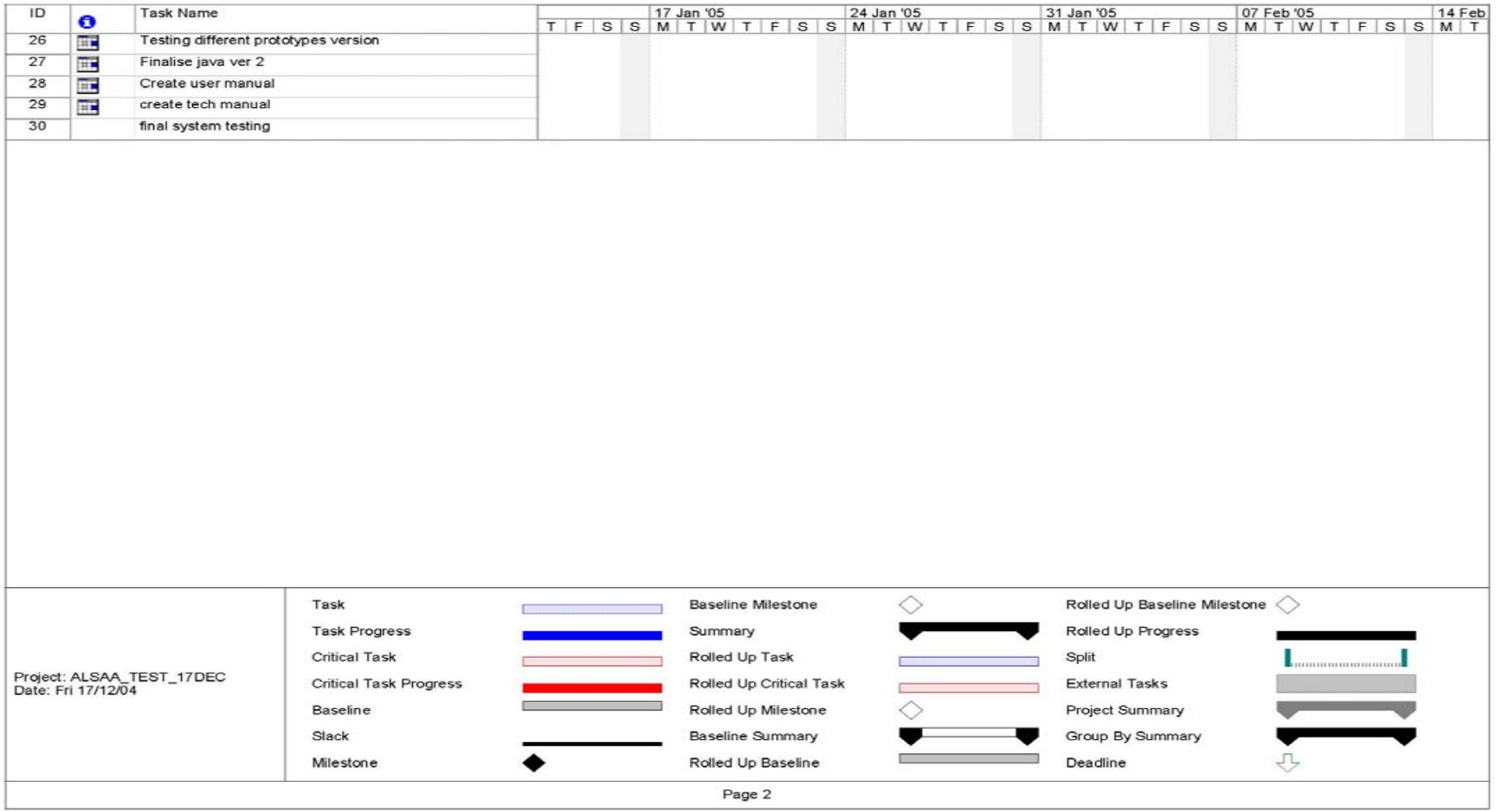
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26 Testing different prototypes version
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29 create tech manual
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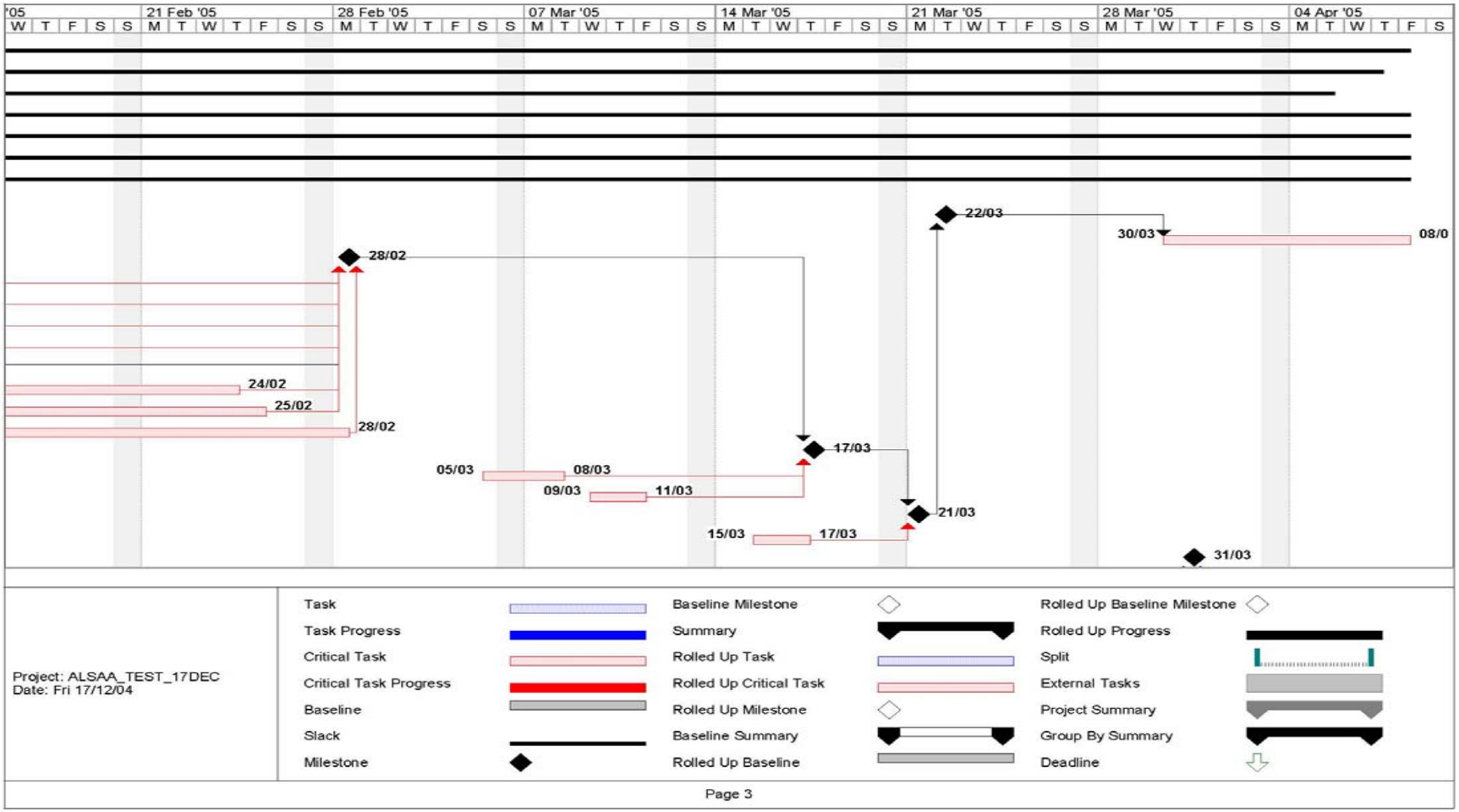
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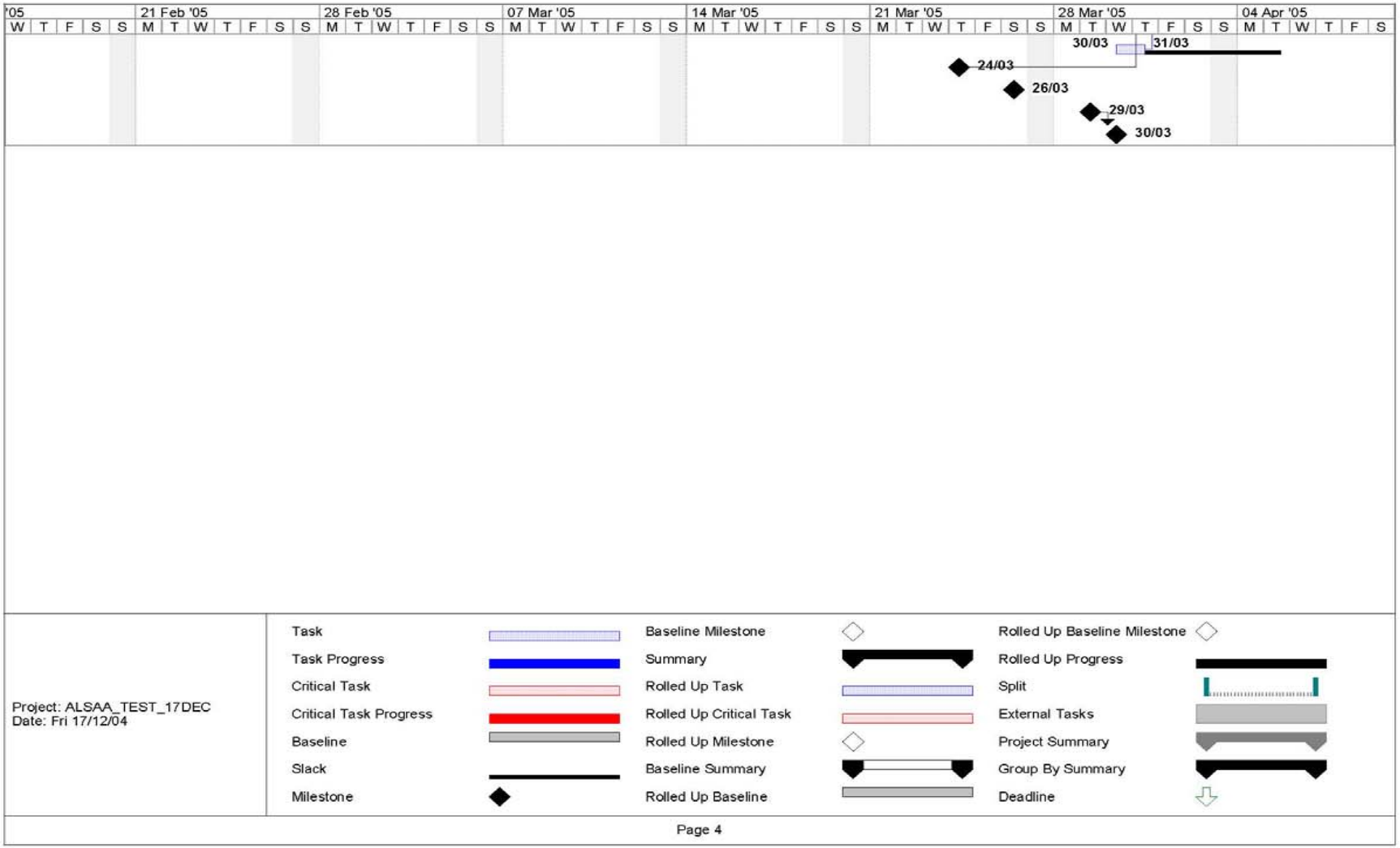
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