Department of Computer Engineering

CSE5041 Database Design & Development
Project Report

Yacht Club Database

	ID	Name & Surname
1st Student:	1600002341	Taha Bilal AYDIN
2nd Student:	1600001092	Ferhat ERDURAN
3rd Student:	1501020057	Özgür DARENDELİ

TABLE OF CONTENTS

LIST OF FIGURES

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Yacth Club Database stores information about the employees, the club members, the yachts and the social facilities of the club. The following data have been identified in the requirements collection and analysis phase and they are to be represented in the enterprise:

• The club members each have a unique yacht, unique identification number and personal information. The database keeps track of the number of both club members and yachts.

• Each yacht has a class and type of its own. Each yacht model also has a brand, hull type and engine brand. From this list we can see all sort of brands on both yachts and their engines.

• The database stores each employee's name, social security number, birthdate, for how many hours and on which social facility they work.. An employee can be assigned to multiple facilities.. The database also keeps track of the number of employees.

• For insurance purposes, the database keeps track of the yachts of each club member. Each club member’s name, contacts and birthdate is recorded in the database.

2 ENTITY RELATIONAL MODEL

2.1 ENHANCED ER DIAGRAM

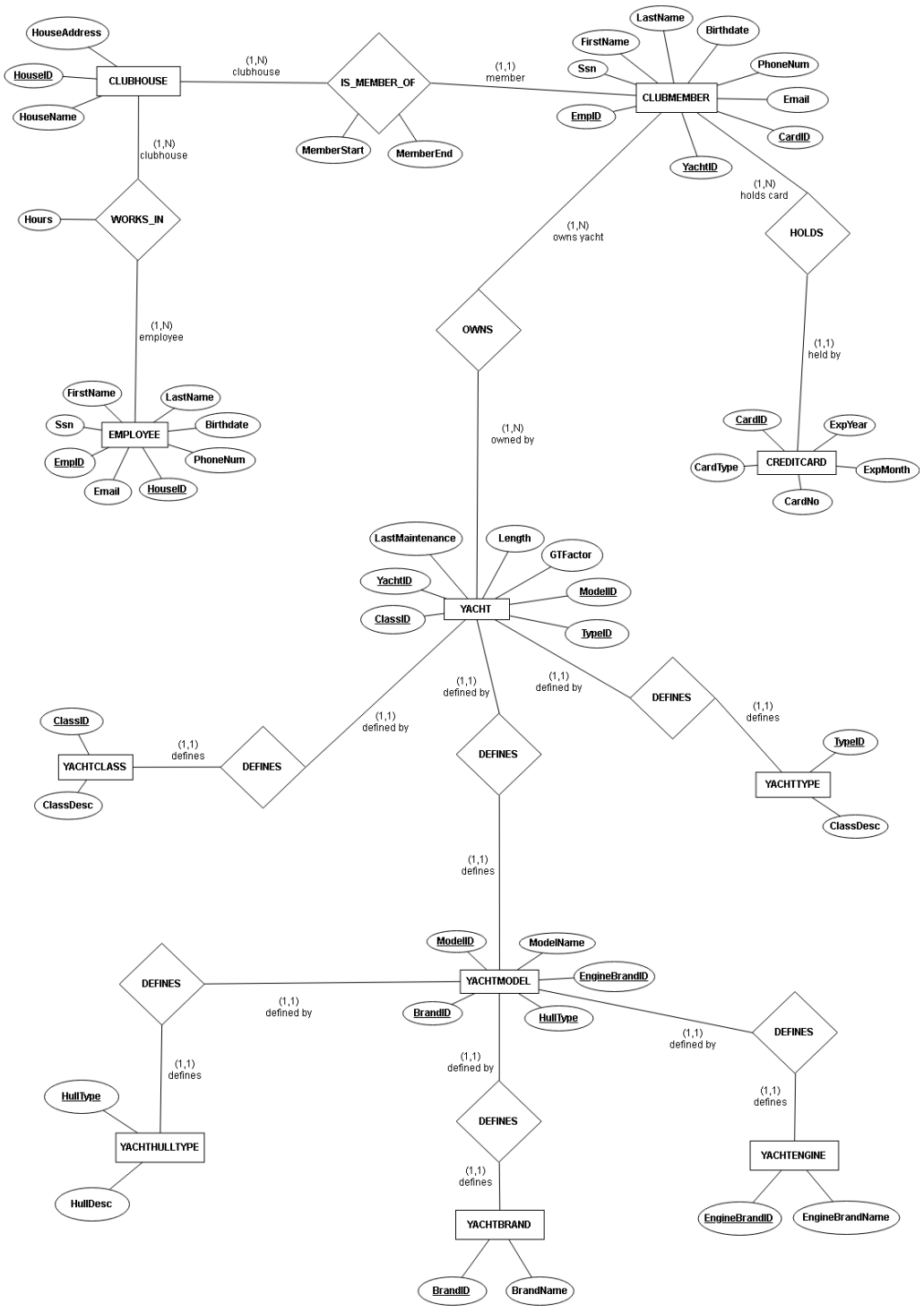

Figure 1: EER diagram of the Yacht Club Database

2.2 RELATIONAL SCHEMA & MAPPING

Employee

EmployeeID	Ssn	FName	LName	BDate	Email	Phone
int	nvarchar(11)	nvarchar(50)	nvarchar(50)	date	nvarchar(50)	int

ClubMember

MemberID	Ssn	FName	LName	BDate	Email	Phone	YachtID	CardID
int	nvarchar(11)	nvarchar(50)	nvarchar(50)	date	nvarchar(50)	int	int	int

Yacht

YachtID	ClassID	TypeID	ModelID	GTFactor	Length	LastMaintenance
int	int	int	int	float	float	date

YachtClass

ClassID	ClassDesc
int	nvarchar(50)

YachtType

TypeID	TypeDesc
int	nvarchar(50)

YachtModel

ModelID	BrandID	ModelName	HullType	EngineBrand
int	int	nvarchar(50)	int	int

YachtBrand

BrandID	BrandName
int	nvarchar(50)

YachtHullType

HullType	HullDesc
int	nvarchar(50)

YachtEngine

EngineBrand	EngineBrandName
int	nvarchar(50)

CreditCard

CardID	CardType	CardNo	ExpMonth	ExpYear
int	nvarchar(50)	nvarchar(20)	int	int

ClubHouse

HouseID	HouseName	HouseAdress
int	nvarchar(50)	nvarchar(50)

WorksIn

EmployeeID	HouseID	Hours
int	int	int

IsMemberOf

MemberID	MemberStart	MemberEnd
int	date	date

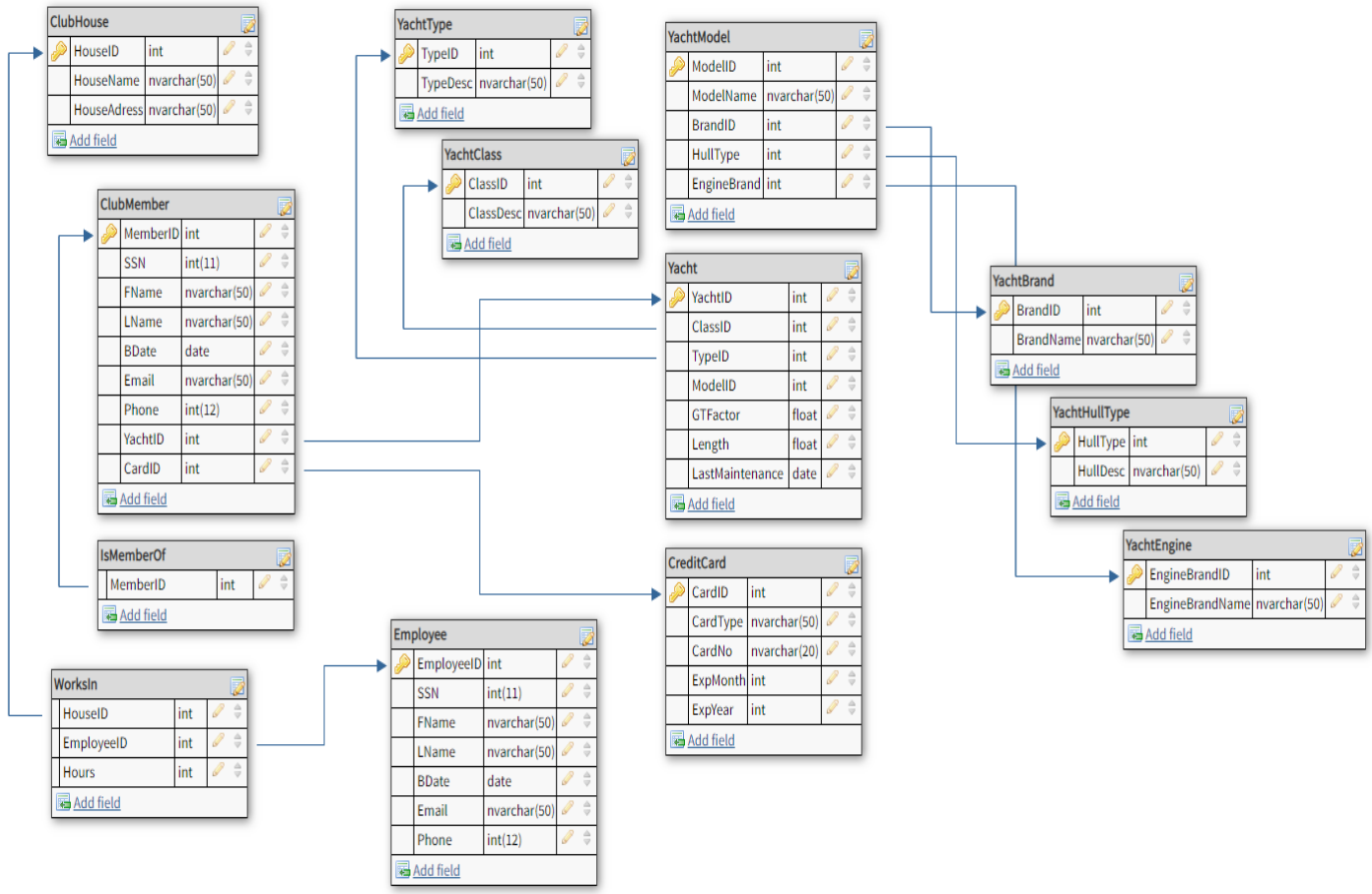

Figure 2: Relationship integrity of the Yacht Club Database

3 NORMALIZATION

3.1 FUNCTIONAL DEPENDENCIES

EmployeeID -> Ssn, FName, LName, BDate, Email, Phone
MemberID -> SSN, Fname, Lname, Bdate, Emaıl, Phone, YachtID, CarID
YachID -> ClassID, TypeID, ModelID, Gtfactor ,Lenght, LastMaintenance
ClassID -> ClassDesc
TypeID -> TypeDesc
ModelID -> BrandID, ModelName, HullType, EngineBrand
CardID -> CardType , CardNo, ExpMonth, ExpYear
HouseID -> HouseName, HouseAdress
BrandID -> BrandName
HullType -> HullDesc
EngineBrand -> EnginBrandName

3.2 UNNORMALISED FORM

3.3 FIRST NORMAL FORM

For first normal form:
Each table cell should contain a single value.
Each record needs to be unique.

Thus, **All tables** are in first normal form.

3.4 SECOND NORMAL FORM

For second normal form:
Be in first normal form.
Single Column Primary Key

Thus, **All tables** are second normal form.

3.5 THIRD NORMAL FORM

For third normal form:
Be in second normal form.
Has no transitive functional dependencies.

Thus, Tables named **YachtModel**, **YachtClass**, **YachtHullType**, **YachtType** are in 3NF.