/\*Type Declarations\*/

CREATE TYPE AddressType AS OBJECT (

Street VARCHAR2(20),

Num NUMBER,

City VARCHAR2(20),

PostCode VARCHAR2(8)

);

CREATE TYPE CustomerType AS OBJECT (

C\_ID VARCHAR2(10),

Name VARCHAR2(20),

Address AddressType,

Age NUMBER,

MAP MEMBER FUNCTION Sum\_to\_date

RETURN NUMBER,

PRAGMA RESTRICT\_REFERENCES(Sum\_to\_date, WNDS, WNPS, RNPS)

) NOT FINAL;

CREATE TYPE RegularCustomerType UNDER CustomerType (

Pay\_late\_period DATE

);

CREATE TYPE ValuedCustomerType UNDER CustomerType ();

CREATE TYPE DiscountType AS OBJECT (

D\_ID VARCHAR2(10),

Date\_created DATE,

ValuedCustomerOwner REF ValuedCustomerType

) NOT FINAL;

CREATE TYPE FixedType UNDER DiscountType (

Rate NUMBER

);

CREATE TYPE FlexibleType UNDER DiscountType (

MAP MEMBER FUNCTION Calc\_Flexible\_Disc

RETURN NUMBER,

PRAGMA RESTRICT\_REFERENCES(Calc\_Flexible\_Disc, WNDS, WNPS, RNPS)

);

CREATE TYPE IncludesType AS OBJECT (

Rate NUMBER,

FlexibleOwner REF FlexibleType,

FlexiRangeOwner REF FlexiRangeType

);

CREATE TYPE FlexiRangeType AS OBJECT (

R\_ID VARCHAR2(10),

RangeStart NUMBER,

RangeEnd NUMBER

);

CREATE TYPE SaleType AS OBJECT (

S\_ID VARCHAR2(10),

S\_Date DATE,

Price NUMBER(7,2),

TicketOwner REF TicketType,

CustomerOwner REF CustomerType

);

CREATE TYPE TicketType AS OBJECT (

T\_ID VARCHAR2(10),

Origin VARCHAR2(20),

Stops VARCHAR2(20),

Destination VARCHAR2(20)

);

/\*Table Declarations\*/

CREATE TABLE Customer OF CustomerType

(

C\_ID PRIMARY KEY

);

CREATE TABLE Regular OF RegularCustomerType;

CREATE TABLE Valued OF ValuedCustomerType;

CREATE TABLE Discount OF DiscountType

(

D\_ID PRIMARY KEY,

SCOPE FOR (ValuedCustomerOwner) IS ValuedCustomer

);

CREATE TABLE Fixed OF FixedType;

CREATE TABLE Flexible OF FlexibleType;

CREATE TABLE Includes OF IncludesType;

CREATE TABLE FlexiRange OF FlexiRangeType(

R\_ID PRIMARY KEY

);

CREATE TABLE Sale OF SaleType(

S\_ID PRIMARY KEY,

SCOPE FOR (TicketOwner) IS Ticket,

SCOPE FOR (CustomerOwner) IS Customer

);

CREATE TABLE Ticket OF TicketType(

T\_ID PRIMARY KEY

);