# Projekt bazy danych restauracji

Spis zawartości:




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**Funkcje i uprawnienia**

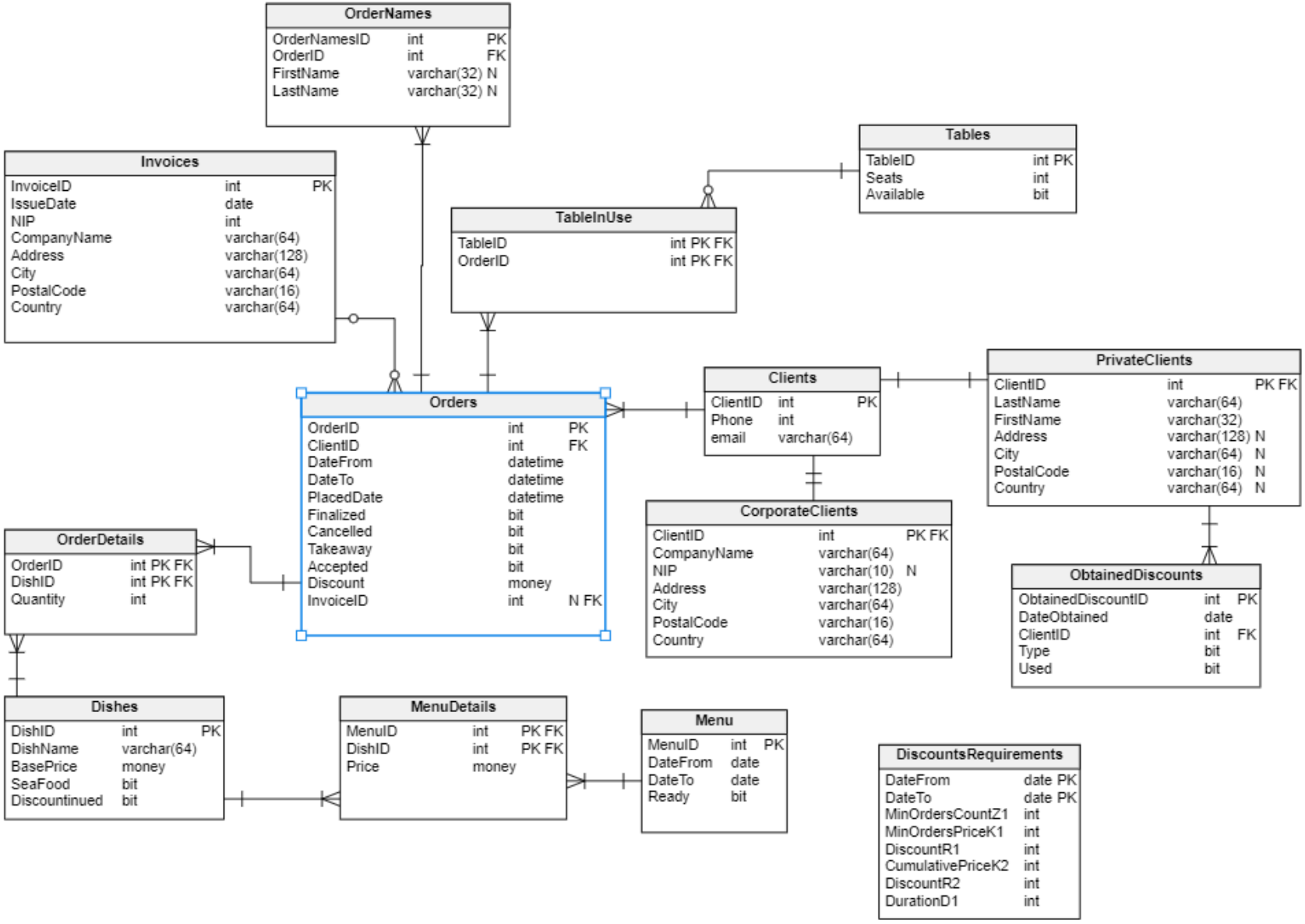
Manager:
-generowanie statystyk  i raportów tygodniowych oraz miesięcznych - z podziałem na typ klienta (rezerwacje stolików, rabaty, menu, zamówienia i czas ich składania),
-przygotowywanie menu,
-zarządzanie daniami,
-zarządzanie zniżkami,
-zarządzanie pracownikami,
-to co zwykły pracownik;

Pracownik:
-akceptowanie rezerwacji,
-przyznanie stolika dla rezerwacji,
-potwierdzenie anulowania rezerwacji,
-przyjmowanie zamówienia na miejscu i na wynos,
-zmiana lub anulowanie zamówienia,
-wystawienie faktury po zamówieniu lub zbiorczej za okres miesiąca,
-przeglądanie rezerwacji,
-przeglądanie menu,
-przeglądanie zamówień,
-przeglądanie dostępności stolików,
-przeglądanie zniżek,
-generowanie raportu dla klienta indywidualnego lub firmy (rezerwacje, zamówienia, zniżki)

Klient indywidualny:
-przeglądanie menu,
-złożenie zamówienia,
-złożenie zamówienia na owoce morza,
-rezerwacja stolika składając zamówienie,
-generowanie raportu o swoich rezerwacjach, zamówieniach, zniżkach;

Firma:
-przeglądanie menu,
-złożenie zamówienia,
-złożenie zamówienia na owoce morza,
-rezerwacja stolików na firmę lub na konkretnych pracowników,
-generowanie raportu o swoich rezerwacjach, zamówieniach, zniżkach (z podziałem na pracowników);

## Schemat bazy danych



## Kod bazy danych i warunki integralności

```
-- tables
-- Table: Clients
CREATE TABLE Clients (
    ClientID int  NOT NULL IDENTITY(1,1),
    Phone int  NOT NULL,
    email varchar(64)  NOT NULL,
    CONSTRAINT Clients_pk PRIMARY KEY  (ClientID)
);

-- Table: CorporateClients
CREATE TABLE CorporateClients (
    ClientID int  NOT NULL,
    CompanyName varchar(64)  NOT NULL,
    NIP varchar(10)  NULL,
    Address varchar(128)  NOT NULL,
    City varchar(64)  NOT NULL,
    PostalCode varchar(16)  NOT NULL,
    Country varchar(64)  NOT NULL,
    CONSTRAINT NIP UNIQUE (NIP),
    CONSTRAINT CorporateClients_pk PRIMARY KEY  (ClientID)
);

-- Table: DiscountsRequirements
CREATE TABLE DiscountsRequirements (
    DateFrom date  NOT NULL,
    DateTo date  NOT NULL,
    MinOrdersCountZ1 int  NOT NULL,
    MinOrdersPriceK1 int  NOT NULL,
    DiscountR1 int  NOT NULL,
    CumulativePriceK2 int  NOT NULL,
    DiscountR2 int  NOT NULL,
    DurationD1 int  NOT NULL,
    CONSTRAINT DiscountsRequirements_pk PRIMARY KEY  (DateFrom,DateTo)
);
```

```sql
-- Table: Dishes
CREATE TABLE Dishes (
    DishID int  NOT NULL IDENTITY(1,1),
    DishName varchar(64)  NOT NULL,
    BasePrice money  NOT NULL, --minimalna cena, za którą opłaca się danie sprzedawać
    SeaFood bit  NOT NULL,
    Discountinued bit  NOT NULL,
    CONSTRAINT Dishes_pk PRIMARY KEY  (DishID)
);

-- Table: Invoices
CREATE TABLE Invoices (
    InvoiceID int  NOT NULL IDENTITY(1,1),
    IssueDate date  NOT NULL,
    NIP int  NOT NULL,
    CompanyName varchar(64)  NOT NULL,
    Address varchar(128)  NOT NULL,
    City varchar(64)  NOT NULL,
    PostalCode varchar(16)  NOT NULL,
    Country varchar(64)  NOT NULL,
    CONSTRAINT Invoices_pk PRIMARY KEY  (InvoiceID)
);

-- Table: Menu
CREATE TABLE Menu (
    MenuID int  NOT NULL IDENTITY(1,1),
    DateFrom date  NOT NULL,
    DateTo date  NOT NULL,
    Ready bit  NOT NULL,
    CONSTRAINT Menu_pk PRIMARY KEY  (MenuID)
);

-- Table: MenuDetails
CREATE TABLE MenuDetails (
    MenuID int  NOT NULL,
    DishID int  NOT NULL,
    Price money  NOT NULL,
    CONSTRAINT MenuDetails_pk PRIMARY KEY  (MenuID,DishID)
);
```

```sql
-- Table: ObtainedDiscounts
CREATE TABLE ObtainedDiscounts (
    ObtainedDiscountID int  NOT NULL IDENTITY(1,1),
    DateObtained date  NOT NULL,
    ClientID int  NOT NULL,
    Type bit  NOT NULL,
    Used bit  NOT NULL,
    CONSTRAINT ObtainedDiscounts_pk PRIMARY KEY  (ObtainedDiscountID)
);

-- Table: OrderDetails
CREATE TABLE OrderDetails (
    OrderID int  NOT NULL,
    DishID int  NOT NULL,
    Quantity int  NOT NULL,
    CONSTRAINT OrderDetails_pk PRIMARY KEY  (OrderID,DishID)
);

-- Table: OrderNames
CREATE TABLE OrderNames (
    OrderNamesID int  NOT NULL IDENTITY(1,1),
    OrderID int  NOT NULL,
    FirstName varchar(32)  NULL,
    LastName varchar(32)  NULL,
    CONSTRAINT OrderNames_pk PRIMARY KEY  (OrderNamesID)
);

-- Table: Orders
CREATE TABLE Orders (
    OrderID int  NOT NULL IDENTITY(1,1),
    ClientID int  NOT NULL,
    DateFrom datetime  NOT NULL,
    DateTo datetime  NOT NULL,
    PlacedDate datetime  NOT NULL,
    Finalized bit  NOT NULL,
    Cancelled bit  NOT NULL,
    Takeaway bit  NOT NULL,
    Accepted bit  NOT NULL,
    Discount money  NOT NULL,
    InvoiceID int  NULL,
    CONSTRAINT Orders_pk PRIMARY KEY  (OrderID)
);
```

```sql
-- Table: PrivateClients
CREATE TABLE PrivateClients (
    ClientID int  NOT NULL,
    LastName varchar(64)  NOT NULL,
    FirstName varchar(32)  NOT NULL,
    Address varchar(128)  NULL,
    City varchar(64)  NULL,
    PostalCode varchar(16)  NULL,
    Country varchar(64)  NULL,
    CONSTRAINT PrivateClients_pk PRIMARY KEY  (ClientID)
);

-- Table: TableInUse
CREATE TABLE TableInUse (
    TableID int  NOT NULL,
    OrderID int  NOT NULL,
    CONSTRAINT TableInUse_pk PRIMARY KEY  (TableID,OrderID)
);

-- Table: Tables
CREATE TABLE Tables (
    TableID int  NOT NULL IDENTITY(1,1),
    Seats int  NOT NULL,
    Available bit  NOT NULL,
    CONSTRAINT Tables_pk PRIMARY KEY  (TableID)
);

-- foreign keys
-- Reference: CorporateClients_Clients (table: CorporateClients)
ALTER TABLE CorporateClients ADD CONSTRAINT CorporateClients_Clients
    FOREIGN KEY (ClientID)
    REFERENCES Clients (ClientID);

-- Reference: MenuDetails_Dishes (table: MenuDetails)
ALTER TABLE MenuDetails ADD CONSTRAINT MenuDetails_Dishes
    FOREIGN KEY (DishID)
    REFERENCES Dishes (DishID);

-- Reference: MenuDetails_Menu (table: MenuDetails)
ALTER TABLE MenuDetails ADD CONSTRAINT MenuDetails_Menu
    FOREIGN KEY (MenuID)
    REFERENCES Menu (MenuID);
```

```sql
-- Reference: OrderDetails_Dishes (table: OrderDetails)
ALTER TABLE OrderDetails ADD CONSTRAINT OrderDetails_Dishes
    FOREIGN KEY (DishID)
    REFERENCES Dishes (DishID);

-- Reference: OrderDetails_Orders (table: OrderDetails)
ALTER TABLE OrderDetails ADD CONSTRAINT OrderDetails_Orders
    FOREIGN KEY (OrderID)
    REFERENCES Orders (OrderID);

-- Reference: OrderNames_Orders (table: OrderNames)
ALTER TABLE OrderNames ADD CONSTRAINT OrderNames_Orders
    FOREIGN KEY (OrderID)
    REFERENCES Orders (OrderID);

-- Reference: Orders_Clients (table: Orders)
ALTER TABLE Orders ADD CONSTRAINT Orders_Clients
    FOREIGN KEY (ClientID)
    REFERENCES Clients (ClientID);

-- Reference: Orders_Invoices (table: Orders)
ALTER TABLE Orders ADD CONSTRAINT Orders_Invoices
    FOREIGN KEY (InvoiceID)
    REFERENCES Invoices (InvoiceID);

-- Reference: PrivateClients_Clients (table: PrivateClients)
ALTER TABLE PrivateClients ADD CONSTRAINT PrivateClients_Clients
    FOREIGN KEY (ClientID)
    REFERENCES Clients (ClientID);

-- Reference: PrivateClients_Discounts (table: ObtainedDiscounts)
ALTER TABLE ObtainedDiscounts ADD CONSTRAINT PrivateClients_Discounts
    FOREIGN KEY (ClientID)
    REFERENCES PrivateClients (ClientID);

-- Reference: TableInUse_Orders (table: TableInUse)
ALTER TABLE TableInUse ADD CONSTRAINT TableInUse_Orders
    FOREIGN KEY (OrderID)
    REFERENCES Orders (OrderID);

-- Reference: Tables_TableInUse (table: TableInUse)
ALTER TABLE TableInUse ADD CONSTRAINT Tables_TableInUse
    FOREIGN KEY (TableID)
    REFERENCES Tables (TableID);
```

```sql
-- Constraints
ALTER TABLE Menu
ADD CONSTRAINT MenuDateCheck CHECK (
    DateTo >= DateFrom
)

ALTER TABLE OrderDetails
ADD CONSTRAINT OrderDetailsQuantityCheck CHECK (
    Quantity > 0
)

ALTER TABLE Orders
ADD CONSTRAINT OrdersDateCheck CHECK (
    DateFrom >= PlacedDate and DateTo > DateFrom
)

ALTER TABLE Tables
ADD CONSTRAINT TablesNumberOfSeatsCheck CHECK (
    Seats > 0
)

ALTER TABLE MenuDetails
ADD CONSTRAINT MenuDetailsPricePositiveCheck CHECK (
    Price > 0
)

ALTER TABLE Dishes
ADD CONSTRAINT DishesBasePricePositiveCheck CHECK (
    BasePrice > 0
)

ALTER TABLE Dishes
ADD OrdersMoneyNotNegativeCheck CHECK (
    Discounts >= 0
)

ALTER TABLE Invoices
ADD InvoicesNIPPositiveCheck CHECK (
    NIP > 0
)

ALTER TABLE Clients
ADD ClientsPhoneNumberPositiveCheck CHECK (
    Phone > 0
)
```

```
ALTER TABLE CorporateClients
ADD CorporateClientsNIPNotNegativeCheck CHECK (
   NIP > 0
)
```

**Złożone warunki integralności**

```
-- complex constraint: Danie w zamówieniu występuje w menu dla daty zamówienia
ALTER TABLE OrderDetails
ADD CONSTRAINT DishInOrderInMenuCheck CHECK (
   dbo.DishInOrderInMenu(DishID, OrderID) = 0
)

CREATE FUNCTION DishInOrderInMenu (@DishID int, @OrderID int) RETURNS bit AS
BEGIN
   if exists
       (select 1
       from Orders as o
       join MenuDetails as md
       on md.DishID = @DishID
       join Menu as m
       on m.MenuID = md.MenuID
       where o.OrderID = @OrderID and (md.DateFrom between DateFrom and DateTo)
       )
       RETURN 1
   RETURN 0
END
```

```
-- complex constraint: nie możemy dokonać zamówienia do stolika
-- zajętego bądź zepsutego
ALTER TABLE Orders
ADD CONSTRAINT FreeTable
CHECK (dbo.FreeTable(OrderID) = 1)

CREATE FUNCTION FreeTableCheck (
 @OrderID int
)
RETURNS bit
AS
BEGIN
 IF exists (select * from Orders
   inner join TableInUse on Orders.OrderID = TableInUse.OrderID
   inner join Tables on Tables.TableID = TableInUse.TableID
   where Tables.Available = 0 and Orders.OrderID = @OrderID)
   RETURN 0
 RETURN 1
END

-- complex constraint: ceny dań w menu większe bądź równe do cen bazowych tych dań
ALTER TABLE MenuDetails
ADD CONSTRAINT menuPriceHigherThanBase
CHECK (dbo.BasePriceDiff(DishID) = 1)

CREATE FUNCTION BasePriceDiff(
   @DishID int
)
RETURNS bit
AS
BEGIN
   IF (select Price-BasePrice
       from Dishes join MenuDetails on Dishes.DishID=MenuDetails.DishID
       where Dishes.DishID=@DishID )>=0 --dania nie opłaca się wówczas sprzedawać
       RETURN 1
   RETURN 0
END
```

```
-- complex constraint: nie możemy dokonać zamówienia, które bierze
-- danie z niegotowego menu
ALTER TABLE Orders
ADD CONSTRAINT OrderFromReadyMenu
CHECK (dbo.OrderFromReadyMenuCheck(OrderID) = 1)

CREATE FUNCTION OrderDetailsQuantityCheck(
 @OrderID int
)
RETURNS bit
AS
BEGIN
 IF exists (select * from Orders
   inner join OrderDetails on OrderDetails.OrderID = Orders.OrderID
   inner join Dishes on Dishes.DishID = OrderDetails.DishID
   inner join MenuDetails on MenuDetails.DishID = Dishes.DishID
   inner join Menu on Menu.MenuID = MenuDetails.MenuID
   where Menu.Ready = 0 and Orders.OrderID = @OrderID)
   RETURN 0
 RETURN 1
END

--complex constraint: seafood
ALTER TABLE OrderDetails
ADD CONSTRAINT SeaFood
CHECK (dbo.SeaFoodCheck(OrderID) = 1)

CREATE FUNCTION SeaFoodCheck (
 @OrderID int
)
RETURNS bit
AS
BEGIN
 IF exists(select * from Orders o where OrderID=@OrderID and DATEPART(weekday,
DateFrom) in (5,6,7) and PlacedDate<=DATEADD(DD,-(DATEPART(WEEKDAY, DateFrom)+5)%7,
DateFrom)) or not exists (select * from Orders o join OrderDetails OD on o.OrderID =
OD.OrderID and o.OrderID=@OrderID
join Dishes D on D.DishID = OD.DishID and SeaFood=1)
   RETURN 1
 RETURN 0
END
```

```
--add order to invoice constraint
ALTER TABLE Orders
ADD CONSTRAINT SameInvoiceAndClientOrderNIP
CHECK (dbo.InvoiceAndClientOrderNIPCheck(OrderID,InvoiceID) = 1)

CREATE FUNCTION InvoiceAndClientOrderNIPCheck (
 @OrderID int,
 @InvoiceID int
)
RETURNS bit
AS
BEGIN
 IF (select NIP from Orders join Clients C on Orders.ClientID = C.ClientID and
OrderID=@OrderID join CorporateClients CC on C.ClientID = CC.ClientID )
        = (select NIP from Invoices where InvoiceID=@InvoiceID) or @InvoiceID IS NULL
   RETURN 1
 RETURN 0
END
```

```
-- complex constraint: warunek aby żadne dwa menu nie zachodziły na
-- siebie datami wystawienia
ALTER TABLE Menu
ADD CONSTRAINT MenuCheck CHECK (
 dbo.MenuCon(MenuID) = 0
)

CREATE FUNCTION MenuCon (@MenuID int)
RETURNS bit
AS
BEGIN
 DECLARE @startdate AS date=(select DateFrom from Menu where MenuId=@MenuID)
 DECLARE @enddate AS date=(select DateTo from Menu where MenuId=@MenuID)
 if exists (select 1 from Menu as m
   where m.MenuID != @MenuID and
   ((@startdate < m.DateTo and m.DateFrom < @enddate) or
   (m.DateFrom < @enddate and @startdate < m.DateTo)))
   RETURN 1
 RETURN 0
END
```

## Widoki i Funkcje

```
-- widok statystyk zamówień z zeszłego miesiąca
CREATE VIEW MonthlyDishesStats AS
select DishID, Suma, Liczba
from dbo.MonthlyDishesStatsF(getdate())

-- widok statystyk zamówień z zeszłego tygodnia
CREATE VIEW WeeklyDishesStats AS
select DishID, Suma, Liczba
from dbo.WeeklyDishesStatsF(getdate())

-- widok wolnych stolików przez następną godzinę
CREATE VIEW FreeTablesOneHour AS
select TableID, Seats
from dbo.TimePeriodFreeTablesF(
 getdate(),
 DATEADD(HOUR,1,getdate()))

-- widok dzisiejszego menu
CREATE VIEW MenuToday AS
select d.DishName, md.Price
from Menu as m
join MenuDetails as md
on md.MenuID = m.MenuID
join Dishes as d
on d.DishID = md.DishID
where GETDATE() between m.DateFrom and m.DateTo;

-- widok aktualnie wolnych stolików
CREATE VIEW FreeTablesNow AS
select distinct t.TableID, t.seats
from Tables as t
where t.TableID not in (select TableId from TableInUse as tiu
join Orders as o
on o.OrderID = tiu.OrderID
where GETDATE() between o.DateFrom and o.DateTo)
and t.Available = 1;
```

```sql
--funkcja: menu na wybrany dzień
CREATE FUNCTION DishesInMenuF (@date datetime)
RETURNS TABLE as
RETURN
 (select D.DishID, DishName, Price
 from MenuDetails
  join Menu on Menu.MenuID = MenuDetails.MenuID
 join Dishes D on MenuDetails.DishID = D.DishID
  where @date between Menu.DateFrom and Menu.DateTo)
GO

--funkcja: oblicza sumaryczną cene zamówienia
CREATE FUNCTION OrderPrice (@orderid INT) RETURNS INT
AS BEGIN RETURN(
 select SUM((Price*Quantity)*(1-Discount))
 from Orders O
 join OrderDetails OD
 on O.OrderID = OD.OrderID and O.OrderID = @orderid
 join Dishes D
 on OD.DishID = D.DishID
 join MenuDetails MD
 on D.DishID = MD.DishID
 join Menu M
 on MD.MenuID = M.MenuID and
 (O.DateFrom between M.DateFrom and M.DateTo)
   GROUP BY O.OrderID)
END

-- funkcja: wolne stoliki na wybrany okres
CREATE FUNCTION TimePeriodFreeTablesF(
 @DateStart datetime, @DateEnd datetime)
RETURNS TABLE AS RETURN(
 select t.TableID, t.Seats
 from Tables as t
 join TableInUse as tiu on tiu.TableID = t.TableID
 join Orders as o on o.OrderID = tiu.OrderID
 where t.Available = 1 and
 (@DateStart not between o.DateFrom and o.DateTo) and
 (@DateEnd not between o.DateFrom and o.DateTo) and
 (o.DateFrom not between @DateStart and @DateEnd) and
 (o.DateTo not between @DateStart and @DateEnd))
```

```sql
--funkcja: statystyki klientów z dowolnego miesiąca (wybieramy początkową datę)
CREATE FUNCTION MonthlyClientsStatsF (@Date datetime)
RETURNS table AS RETURN
(select * from TimePeriodClientsStatsF(@Date, DATEADD(MONTH, 1, @Date)))


--funkcja: statystyki klientów z dowolnego tygodnia (wybieramy początkową datę)
CREATE FUNCTION WeeklyClientsStatsF (@Date datetime)
RETURNS table AS RETURN
(select * from TimePeriodClientsStatsF(@Date, DATEADD(WEEK, 1, @Date)))

--funkcja: statystyki klientów z dowolnego okresu czasu
CREATE FUNCTION TimePeriodClientsStatsF
(@DateStart datetime, @DateEnd datetime)
RETURNS TABLE AS RETURN (
 select c.ClientID, sum(od.Quantity * md.Price*(1-Discount)) Suma, sum(od.Quantity) Liczba
 from Clients as c
 join Orders as o
 on c.ClientID = o.ClientID
 join OrderDetails as od
 on od.OrderID = o.OrderID
 join MenuDetails as md
 on od.DishID = md.DishID
 join Menu as m
 on md.MenuID = m.MenuID
 where (o.DateFrom between @DateStart and @DateEnd) and
 ( (m.DateFrom between CONVERT(date,@DateStart) and CONVERT(date,@DateEnd))
 or (m.DateTo between CONVERT(date,@DateStart)  and CONVERT(date,@DateEnd))
 or (CONVERT(date,@DateEnd) between m.DateFrom and m.DateTo)
 or (CONVERT(date,@DateStart)  between m.DateFrom and m.DateTo) )
 group by c.ClientID
)

--funkcja: statystyki dań z dowolnego miesiąca (wybieramy początkową datę)
CREATE FUNCTION MonthlyDishesStatsF (@Date datetime)
RETURNS table AS RETURN
(select * from TimePeriodStatsF(@Date, DATEADD(MONTH, 1, @Date)))


--funkcja: statystyki dań z dowolnego tygodnia (wybieramy początkową datę)
CREATE FUNCTION WeeklyDishesStatsF (@Date datetime)
RETURNS table AS RETURN
```

```sql
(select * from TimePeriodStatsF(@Date, DATEADD(WEEK, 1, @Date)))


-- funkcja: statystyki zamówień z dowolnego okresu
CREATE FUNCTION TimePeriodStatsF
(@DateStart datetime, @DateEnd datetime)
RETURNS TABLE AS RETURN (
 select md.DishID, sum(od.Quantity * md.Price) Suma, sum(Quantity) Liczba
 from Orders as o
 join OrderDetails as od
 on o.OrderID = od.OrderID
 join MenuDetails as md
 on md.DishID = od.DishID
 join Menu as m
 on m.MenuID = md.MenuID
 where o.Finalized = 1
 and (o.DateFrom between @DateStart and @DateEnd)
 and ( (m.DateFrom between @DateStart and @DateEnd)
 or (m.DateTo between @DateStart and @DateEnd)
 or (@DateEnd between m.DateFrom and m.DateTo)
 or (@DateStart between m.DateFrom and m.DateTo))
 group by md.DishID)
```

## Procedury

```
-- finalize
CREATE PROCEDURE FinalizeOrder (@OrderID int)
AS
BEGIN
   IF (EXISTS(SELECT * FROM Orders WHERE OrderID = @OrderID))
     UPDATE Orders
     SET Finalized = 1
     WHERE OrderID = @OrderID
   ELSE
       PRINT 'Zamówienie nie znajduje się w bazie'
END

-- cancel
CREATE PROCEDURE CancelOrder (@OrderID INT)
AS
BEGIN
   IF (EXISTS(SELECT * FROM Orders WHERE OrderID = @OrderID))
     UPDATE Orders
     SET Cancelled = 1
     WHERE OrderID = @OrderID
   ELSE
       PRINT 'Zamówienie nie znajduje się w bazie'
END

-- accept
CREATE PROCEDURE AcceptOrder (@OrderID INT)
AS
BEGIN
   IF (EXISTS(SELECT * FROM Orders WHERE OrderID = @OrderID))
     UPDATE Orders
     SET Accepted = 1
     WHERE OrderID = @OrderID
   ELSE
       PRINT 'Zamówienie nie znajduje się w bazie'
END
```

```sql
-- add to invoice
CREATE PROCEDURE AddOrderToInvoice (@OrderID INT, @InvoiceID INT)
AS
BEGIN
 UPDATE Orders
 SET InvoiceID = @InvoiceID
 WHERE OrderID = @OrderID
END

-- add dish to order
CREATE PROCEDURE AddDishToOrder
 @OrderID int,
 @DishID int,
 @Quantity int
AS
BEGIN
   IF(exists(select 1 from OrderDetails where OrderID=@OrderID and DishID=@DishID))
       UPDATE OrderDetails
       SET Quantity=(select Quantity from OrderDetails where @OrderID=OrderID and
DishID=@DishID)+@Quantity
       WHERE OrderID=@OrderID and DishID=@DishID
   ELSE
     INSERT INTO OrderDetails(OrderID, DishID, Quantity)
     SELECT @OrderID, @DishID, @Quantity FROM Dishes WHERE DishID = @DishID
END
```