НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ

"КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ"

КАФЕДРА АВТОМАТИЗОВАНИХ СИСТЕМ ОБРОБКИ ІНФОРМАЦІЇ І

УПРАВЛІННЯ

Комп'ютерний практикум №3,4

з дисципліни

" OLAP та сховища даних"

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Імпорт даних

Дані імпортувались як неструктуровані файли в MSSQL Server Management Studio.

З`єднання даних в 1 таблицю

1. Створення таблиці stage_zone

```sql
create table stage_zone (
    [Id_player] int not null primary key identity (1,1),
    [Wage____] [int] NULL,
    [Value____] [int] NULL,
    [N] [int] NULL,
    [Name] [nvarchar](50) NULL,
    [Photo] [nvarchar](50) NULL,
    [Nationality] [nvarchar](50) NULL,
    [Overall] [int] NULL,
    [Potential] [int] NULL,
    [Club] [nvarchar](50) NULL,
    [Special] [int] NULL,
    [Acceleration] [int] NULL,
    [Aggression] [int] NULL,
    [Agility] [int] NULL,
    [Balance] [int] NULL,
    [Ball_control] [int] NULL,
    [Composure] [int] NULL,
    [Crossing] [int] NULL,
    [Curve] [int] NULL,
    [Dribbling] [int] NULL,
    [Finishing] [int] NULL,
    [Free_kick_accuracy] [int] NULL,
    [GK_diving] [int] NULL,
    [GK_handling] [int] NULL,
    [GK_kicking] [int] NULL,
    [GK_positioning] [int] NULL,
    [GK_reflexes] [int] NULL,
    [Heading_accuracy] [int] NULL,
    [Interceptions] [int] NULL,
    [Jumping] [int] NULL,
    [Long_passing] [int] NULL,
    [Long_shots] [int] NULL,
    [Marking] [int] NULL,
    [Penalties] [int] NULL,
    [Positioning] [int] NULL,
    [Reactions] [int] NULL,
    [Short_passing] [int] NULL,
    [Shot_power] [int] NULL,
    [Sliding_tackle] [int] NULL,
    [Sprint_speed] [int] NULL,
    [Stamina] [int] NULL,
    [Standing_tackle] [int] NULL,
    [Strength] [int] NULL,
    [Vision] [int] NULL,
    [Volleys] [int] NULL,
```

```sql
    [CAM] [int] NULL,
    [CB] [int] NULL,
    [CDM] [int] NULL,
    [CF] [int] NULL,
    [CM] [int] NULL,
    [ID] [int] NULL,
    [LAM] [int] NULL,
    [LB] [int] NULL,
    [LCB] [int] NULL,
    [LCM] [int] NULL,
    [LDM] [int] NULL,
    [LF] [int] NULL,
    [LM] [int] NULL,
    [LS] [int] NULL,
    [LW] [int] NULL,
    [LWB] [int] NULL,
    [Preferred_Positions] [nvarchar](50) NULL,
    [RAM] [int] NULL,
    [RB] [int] NULL,
    [RCB] [int] NULL,
    [RCM] [int] NULL,
    [RDM] [int] NULL,
    [RF] [int] NULL,
    [RM] [int] NULL,
    [RS] [int] NULL,
    [RW] [int] NULL,
    [RWB] [int] NULL,
    [ST] [int] NULL,
    [BirthDate] [datetime2](7) NULL,
    [ShirtName] [nvarchar](50) NULL,
    [Height] [int] NULL,
    [Weight] [int] NULL
);
```

2. Заповнення даними з таблиці `fifa18_clean`

```sql
insert into stage_zone (Wage____,Value____, Name, Photo, Nationality, Overall, Potential, Club,
            Special, Acceleration,Aggression, Agility, Balance, Ball_control, Composure,
            Crossing,Curve, Dribbling, Finishing, Free_kick_accuracy, GK_diving,
            GK_handling, GK_kicking, GK_positioning, GK_reflexes, Heading_accuracy,
            Interceptions, Jumping, Long_passing, Long_shots, Marking, Penalties,
            Positioning, Reactions, Short_passing, Shot_power, Sliding_tackle,
            Sprint_speed, Stamina, Standing_tackle, Strength, Vision, Volleys,
            CAM, CB, CDM, CF, CM, ID, LAM, LB, LCB, LCM, LDM, LF, LM, LS, LW, LWB,
            Preferred_Positions,RAM, RB, RCB, RCM, RDM, RF, RM, RS, RW, RWB, ST)
    select Wage____,Value____, Name, Photo, Nationality, Overall, Potential, Club,
            Special, Acceleration,Aggression, Agility, Balance, Ball_control, Composure,
            Crossing, Curve, Dribbling, Finishing, Free_kick_accuracy, GK_diving,
            GK_handling, GK_kicking, GK_positioning, GK_reflexes, Heading_accuracy,
            Interceptions, Jumping, Long_passing, Long_shots, Marking, Penalties,
            Positioning, Reactions, Short_passing, Shot_power, Sliding_tackle,
            Sprint_speed, Stamina, Standing_tackle, Strength, Vision, Volleys,
            CAM, CB, CDM, CF, CM, ID, LAM, LB, LCB, LCM, LDM, LF, LM, LS, LW, LWB,
            Preferred_Positions, RAM, RB, RCB, RCM, RDM, RF, RM, RS, RW, RWB, ST
    from fifa18_clean ;
```

3. Merge з таблицею `wc2018players`

```sql
Merge into stage_zone as tab1
using(select * from wc2018players) as tab2
```

```sql
    on tab1.Name=tab2.Fifa_Popular_Name
when matched then
    update set
    tab1.Preferred_Positions=tab2.Pos_,
    tab1.Nationality=tab2.Team,
    tab1.BirthDate=tab2.BirthDate,
    tab1.ShirtName=tab2.ShirtName,
    tab1.Club=tab2.Club,
    tab1.N=tab2.N,
    tab1.Height=tab2.Height,
    tab1.Weight=tab2.Weight
when not matched then
    insert (Name, Preferred_Positions, Nationality, BirthDate, ShirtName, Club, N, Height,
Weight)
    values (tab2.Fifa_Popular_Name, tab2.Pos_, tab2.Team, tab2.BirthDate, tab2.ShirtName,
tab2.Club,
                tab2.N, tab2.Height, tab2.Weight);
```

4. Курсори на вставку інформаціїї з таблиці

```sql
declare football_cursor1 cursor
for
  select Name from stage_zone
open football_cursor1
declare  @counter int
declare  @name_var varchar(100)
set @counter = 0
fetch next from football_cursor1 INTO  @name_var
while @@FETCH_STATUS = 0
begin
set @counter = @counter + 1
SELECT @name_var
if @name_var='CRISTIANO RONALDO'
        begin
                insert into stage_zone (Sliding_Tackle)
          select Christiano_Ronaldo from football
          where football.Secondary_Skill = 'Slide Tackle'

                insert into stage_zone (Standing_tackle)
          select Christiano_Ronaldo from football
          where football.Secondary_Skill = 'Stand Tackle'

                insert into stage_zone (Vision)
          select Christiano_Ronaldo from football
          where football.Secondary_Skill = 'Vision'

                insert into stage_zone (Strength)
          select Christiano_Ronaldo from football
          where football.Secondary_Skill = 'Strength'
        end

fetch next from football_cursor1 INTO  @name_var
end
select @counter as final_count
close football_cursor1
deallocate football_cursor1

declare football_cursor2 cursor
for
  select Name from stage_zone
```

```sql
open football_cursor2
declare  @counter int
declare  @name_var varchar(100)
set @counter = 0
fetch next from football_cursor2 INTO  @name_var
while @@FETCH_STATUS = 0
begin
set @counter = @counter + 1
SELECT @name_var
if @name_var='MESSI Lionel'
        begin
                insert into stage_zone (Sliding_Tackle)
         select Lionel_Messi from football
         where football.Secondary_Skill = 'Slide Tackle'

                insert into stage_zone (Standing_tackle)
         select Lionel_Messi from football
         where football.Secondary_Skill = 'Stand Tackle'

                insert into stage_zone (Vision)
         select Lionel_Messi from football
         where football.Secondary_Skill = 'Vision'

                insert into stage_zone (Strength)
         select Lionel_Messi from football
         where football.Secondary_Skill = 'Strength'

                select @counter as final_count
        end
fetch next from football_cursor2 INTO  @name_var
end
select @counter as final_count
close football_cursor2
deallocate football_cursor2

declare football_cursor3 cursor
for
  select Name from stage_zone
open football_cursor3
declare  @counter int
declare  @name_var varchar(100)
set @counter = 0
fetch next from football_cursor3 INTO  @name_var
while @@FETCH_STATUS = 0
begin
set @counter = @counter + 1
SELECT @name_var
if @name_var='NEYMAR'
        begin
                insert into stage_zone (Sliding_Tackle)
         select Neymar from football
         where football.Secondary_Skill = 'Slide Tackle'

                insert into stage_zone (Standing_tackle)
         select Neymar from football
         where football.Secondary_Skill = 'Stand Tackle'

                insert into stage_zone (Vision)
         select Neymar from football
         where football.Secondary_Skill = 'Vision'
```

```sql
            insert into stage_zone (Strength)
        select Neymar from football
        where football.Secondary_Skill = 'Strength'

            select @counter as final_count
        end
fetch next from football_cursor3 INTO  @name_var
end
select @counter as final_count
close football_cursor3
deallocate football_cursor3
```

Поділ stage_zone на таблицю фактів та таблиці вимірів

```sql
create table footballers(
        [Id_player] [int] primary key not null,
        [N] [int] NULL,
        [Name] [nvarchar](50) NULL,
        [ShirtName] [nvarchar](50) NULL,
        [Photo] [nvarchar](50) NULL,
        [BirthDate] [datetime2](7) NULL,
        [Height] [int] NULL,
        [Weight] [int] NULL
);

insert into footballers (Id_player, N, Name, ShirtName, Photo, BirthDate, Height, Weight)
select Id_player, N, Name, ShirtName, Photo, BirthDate, Height, Weight from stage_zone;

create table footballers_skills(
        [Id_player] [int] references footballers (Id_player),
        [Potential] [int] NULL,
        [Special] [int] NULL,
        [Acceleration] [int] NULL,
        [Aggression] [int] NULL,
        [Agility] [int] NULL,
        [Balance] [int] NULL,
        [Ball_control] [int] NULL,
        [Composure] [int] NULL,
        [Crossing] [int] NULL,
        [Curve] [int] NULL,
        [Dribbling] [int] NULL,
        [Finishing] [int] NULL,
        [Free_kick_accuracy] [int] NULL,
        [GK_diving] [int] NULL,
        [GK_handling] [int] NULL,
        [GK_kicking] [int] NULL,
        [GK_positioning] [int] NULL,
        [GK_reflexes] [int] NULL,
        [Heading_accuracy] [int] NULL,
        [Interceptions] [int] NULL,
        [Jumping] [int] NULL,
        [Long_passing] [int] NULL,
        [Long_shots] [int] NULL,
        [Marking] [int] NULL,
        [Penalties] [int] NULL,
        [Positioning] [int] NULL,
        [Reactions] [int] NULL,
        [Short_passing] [int] NULL,
        [Shot_power] [int] NULL,
        [Sliding_tackle] [int] NULL,
```

```sql
        [Sprint_speed] [int] NULL,
        [Stamina] [int] NULL,
        [Standing_tackle] [int] NULL,
        [Strength] [int] NULL,
        [Vision] [int] NULL,
        [Volleys] [int] NULL,
        [CAM] [int] NULL,
        [CB] [int] NULL,
        [CDM] [int] NULL,
        [CF] [int] NULL,
        [CM] [int] NULL,
        [ID] [int] NULL,
        [LAM] [int] NULL,
        [LB] [int] NULL,
        [LCB] [int] NULL,
        [LCM] [int] NULL,
        [LDM] [int] NULL,
        [LF] [int] NULL,
        [LM] [int] NULL,
        [LS] [int] NULL,
        [LW] [int] NULL,
        [LWB] [int] NULL,
        [Preferred_Positions] [nvarchar](50) NULL,
        [RAM] [int] NULL,
        [RB] [int] NULL,
        [RCB] [int] NULL,
        [RCM] [int] NULL,
        [RDM] [int] NULL,
        [RF] [int] NULL,
        [RM] [int] NULL,
        [RS] [int] NULL,
        [RW] [int] NULL,
        [RWB] [int] NULL,
        [ST] [int] NULL
);

insert into footballers_skills (Id_player, Potential, Special, Acceleration,Aggression, Agility,
Balance, Ball_control, Composure, Crossing,
                Curve, Dribbling, Finishing, Free_kick_accuracy, GK_diving, GK_handling,
GK_kicking,
                GK_positioning, GK_reflexes, Heading_accuracy, Interceptions, Jumping,
Long_passing,
                Long_shots, Marking, Penalties, Positioning, Reactions, Short_passing,
Shot_power,
                Sliding_tackle, Sprint_speed, Stamina, Standing_tackle, Strength, Vision,
Volleys,
                CAM, CB, CDM, CF, CM, ID, LAM, LB, LCB, LCM, LDM, LF, LM, LS, LW, LWB,
Preferred_Positions,
                RAM, RB, RCB, RCM, RDM, RF, RM, RS, RW, RWB, ST)
select Id_player, Potential, Special, Acceleration,Aggression, Agility, Balance, Ball_control,
Composure, Crossing,
                Curve, Dribbling, Finishing, Free_kick_accuracy, GK_diving, GK_handling,
GK_kicking,
                GK_positioning, GK_reflexes, Heading_accuracy, Interceptions, Jumping,
Long_passing,
                Long_shots, Marking, Penalties, Positioning, Reactions, Short_passing,
Shot_power,
                Sliding_tackle, Sprint_speed, Stamina, Standing_tackle, Strength, Vision,
Volleys,
                CAM, CB, CDM, CF, CM, ID, LAM, LB, LCB, LCM, LDM, LF, LM, LS, LW, LWB,
Preferred_Positions,
```

```sql
                    RAM, RB, RCB, RCM, RDM, RF, RM, RS, RW, RWB, ST
from stage_zone;

create table Nationalities(
      [Id_nationality] [int] primary key identity (1,1),
      [Nationality] [nvarchar](50)
);

insert into Nationalities (Nationality)
select distinct Nationality from stage_zone;

create table Clubs(
      [Id_club] [int] primary key identity (1,1),
      [Club] [nvarchar](50)
);

insert into Clubs (Club)
select distinct Club from stage_zone;

create unique index i1 on Nationalities (Nationality);
create unique index i2 on Clubs (Club);

create table Dates(
      [Id_date][int] primary key identity (1,1),
      [BirthDate][datetime2]
      );
insert into Dates (BirthDate)
select BirthDate from stage_zone;

create table fact_table(
      [Id_player] [int] references footballers (Id_player),
      [Wage____] [int] ,
      [Value____] [int],
      [Id_date][int] references Dates(Id_date),
      [Nationality] [nvarchar](50) references Nationalities (Nationality),
      [Club] [nvarchar](50) references Clubs (Club)
);

insert into fact_table (Id_player, Wage____, Value____, Nationality, Club)
select Id_player, Wage____, Value____, Nationality, Club from stage_zone;
```

Тригери та процедури для оновлення інформації

```sql
create trigger facts_update_nationality
on fact_table
after update
as
insert into fact_table (Nationality)
select Nationality from Nationalities

create trigger facts_update_club
on fact_table
after update
as
insert into fact_table (Club)
select Club from Clubs

create procedure update_Nationality1
      @name_old int,
      @name_new varchar (50)
```

```
as
update Nationalities
set Nationality=@name_new where Nationality=@name_old

create procedure update_Club
        @name_old int,
        @name_new varchar (50)
as
update Clubs
set Club=@name_new where Club=@name_old
```

Схема (топологія "сніжинка")