



T-SQL TILI ASOSIY OPERATORLARI

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Annotatsiya: Ushbu maqolada T-SQL (Transact-SQL) tili va uning asosiy operatorlari haqida batafsil ma'lumot berilgan. Maqolada DDL, DML, DCL va TCL operatorlari turlari, ularning vazifasi hamda amaliy misollar keltirilgan. tamoyili tushuntirilgan. Maqola T-SQL tilining ma'lumotlar bazasini boshqarishdagi o'rni va ahamiyatini yoritib, dasturchilar uchun amaliy ko'nikmalarni shakllantirishga qaratilgan.

Abstract: This article provides detailed information about the T-SQL (Transact-SQL) language and its main operators. The article presents the types of DDL, DML, DCL and TCL operators, their functions and practical examples. It also explains the principle of operation of conditional and cyclic operators such as IF...ELSE and WHILE. The article is aimed at highlighting the role and importance of the T-SQL language in database management and developing practical skills for programmers.

Аннотация: В этой статье представлена подробная информация о языке T-SQL (Transact-SQL) и его базовых операторах. В статье представлены типы операторов DDL, DML, DCL и TCL, их функции и практические примеры. Также объясняется принцип работы условных и



циклических операторов, таких как *IF...ELSE* и *WHILE*. Статья освещает роль и значение языка *T-SQL* в управлении базами данных и направлена на развитие практических навыков программистов.

Kalit soʻzlar: *T-SQL, Transact-SQL, SQL Server, maʼlumotlar bazasi, DDL operatorlari, DML operatorlari, DCL operatorlari, TCL operatorlari, SELECT, INSERT, UPDATE, DELETE, CREATE, ALTER, DROP, TRUNCATE, tranzaksiya, shartli operator, sikl operatori, IF ELSE, WHILE, maʼlumotlar bilan ishlash, SQL sintaksisi.*

Ключевые слова: *T-SQL, Transact-SQL, SQL Server, база данных, операторы DDL, операторы DML, операторы DCL, операторы TCL, SELECT, INSERT, UPDATE, DELETE, CREATE, ALTER, DROP, TRUNCATE, транзакция, условный оператор, оператор цикла, IF ELSE, WHILE, обработка данных, программирование, синтаксис SQL.*

Key words: *T-SQL, Transact-SQL, SQL Server, data base, DDL operators, DML operators, DCL operators, TCL operators, SELECT, INSERT, UPDATE, DELETE, CREATE, ALTER, DROP, TRUNCATE, transaksiya, shartli operator, sikl operatori, IF ELSE, WHILE, data processing, dasturlash, SQL syntax.*

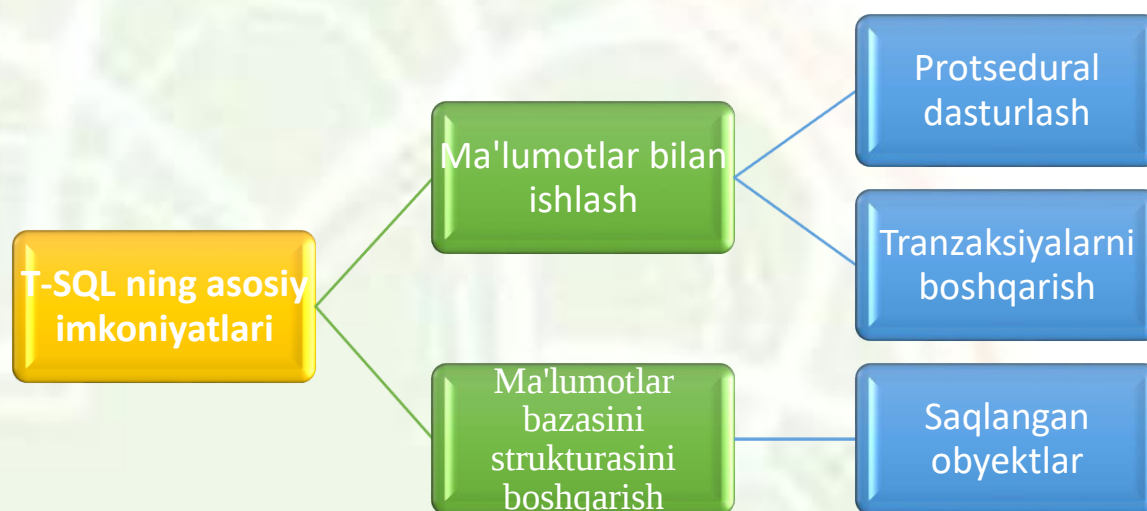
Kirish

Transact-SQL (T-SQL) — bu Microsoft SQL Server va Sybase ASE maʼlumotlar bazasi boshqaruv tizimlarida ishlatiladigan SQL (Structured Query Language) tilining kengaytirilgan versiyasidir. T-SQL yordamida foydalanuvchi maʼlumotlarni yaratish, oʻzgartirish, oʻchirish va tahlil qilishni bajaradi. Unda SQL standartidagi buyruqlar bilan bir qatorda dasturlash elementlari (shart, sikl, oʻzgaruvchi, funksiya) ham mavjud.

T-SQL (Transact-SQL) — bu **Microsoft SQL Server** va **Azure SQL Databaseda** ishlatiladigan. **SQL (Structured Query Language)** tilining **kengaytirilgan versiyasi** hisoblanadi. T-SQL'ni **Microsoft** va **Sybase** kompaniyalari birgalikda ishlab chiqqan. Standart SQL bilan bir qatorda **protsedural imkoniyatlar** (masalan: oʻzgaruvchilar, sikllar, shart operatorlari,



funksiyalar) qo'shilgan. Zamonaviy axborot tizimlarida ma'lumotlarni saqlash, qayta ishlash va ulardan samarali foydalanish jarayoni yetakchi o'rin egallaydi. Ayniqsa, tashkilotlar, korporativ tizimlar, banklar, ta'lim tizimi va turli sanoat sohalarida katta hajmdagi ma'lumotlar bilan ishlash uchun ishonchli va tezkor vositalarga ehtiyoj yuqori. Shunday vositalardan biri bu — **T-SQL (Transact-SQL)** bo'lib, u **Microsoft SQL Server** ma'lumotlar bazasini boshqarish tizimida qo'llaniladigan asosiy til hisoblanadi. T-SQL oddiy SQL ga nisbatan yanada rivojlangan, funksional jihatdan boy va kuchli imkoniyatlarga ega bo'lgan til bo'lib, u nafaqat ma'lumotlar ustida amallar bajarish, balki ularni boshqarish, optimallashtirish va avtomatlashtirish imkonini ham beradi.

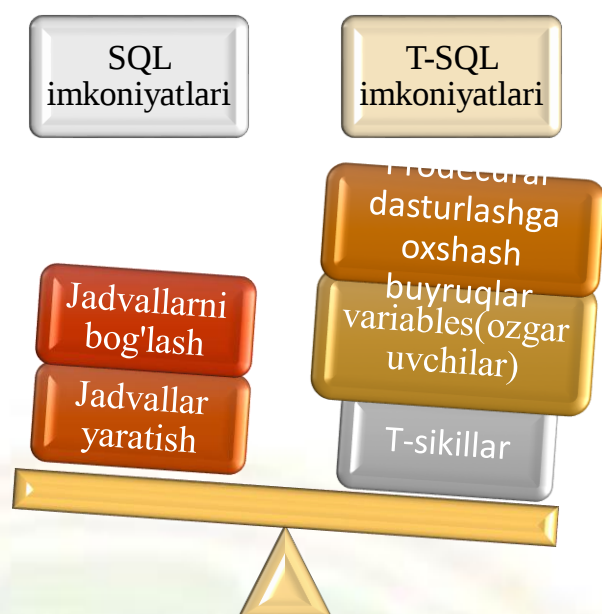


1-rasm

T-SQL (Transact-SQL) — bu Microsoft SQL Serverda qo'llaniladigan SQL tilining kengaytirilgan versiyasi bo'lib, unda standart SQL imkoniyatlari bilan bir qatorda dasturlash elementlari, tranzaksiyalarni boshqarish, xatolarni ushlash, ma'lumotlarni tahlil qilish kabi qo'shimcha funksiyalar mavjud. T-SQL nafaqat ma'lumotlarni olish, balki ularni boshqarish, avtomatlashtirish va murakkab biznes



jarayonlarini amalga oshirish uchun ham mo'ljallangan qudratli til hisoblanadi.



2-rasm

SQL va T-SQL ikkalasi ham ma'lumotlar bazasida ishlash uchun muhim vositalar hisoblanadi.

SQL — platforma mustaqil, standart, soddaligi bilan ajralib turadi. Kichik va o'rta loyihalar uchun yetarli.

T-SQL — Microsoft SQL Server uchun kengaytirilgan, kuchli va funksional til. U SQLning imkoniyatlarini to'liq qo'llaydi va ustiga-ustak **tranzaksiyalar, stored procedure, trigger, funksiyalar, protsedural elementlar va analitik funksiyalarni** qo'llash imkonini beradi.

Quyidagi jadvalda T-SQL imkoniyatlari umumiy SQL bilan solishtirilgan:

Imkoniyat	SQL	T
SQL		
SELECT/INSERT/UPDATE/DELETE	✓ ✓	
Stored Procedure	✗	✓
Function yaratish	✗	✓
Variables (o'zgaruvchilar)	✗	✓
IF/ELSE	✗	✓
LOOP (WHILE)	✗	✓





TRY/CATCH ✓

Transaction boshqaruvi Cheklangan To✓

Cursor ✓

DDL — Data Definition Language (Tuzilmani (jadval, baza, index, view) yaratish va o'zgartirish uchun ishlatiladi).

DML — Data Manipulation Language (Jadval ichidagi MA'LUMOTLAR bilan ishlaydi).

DCL — Data Control Language (Ma'lumotlar bazasi foydalanuvchilariga ruxsat berish yoki ruxsatni bekor qilish).

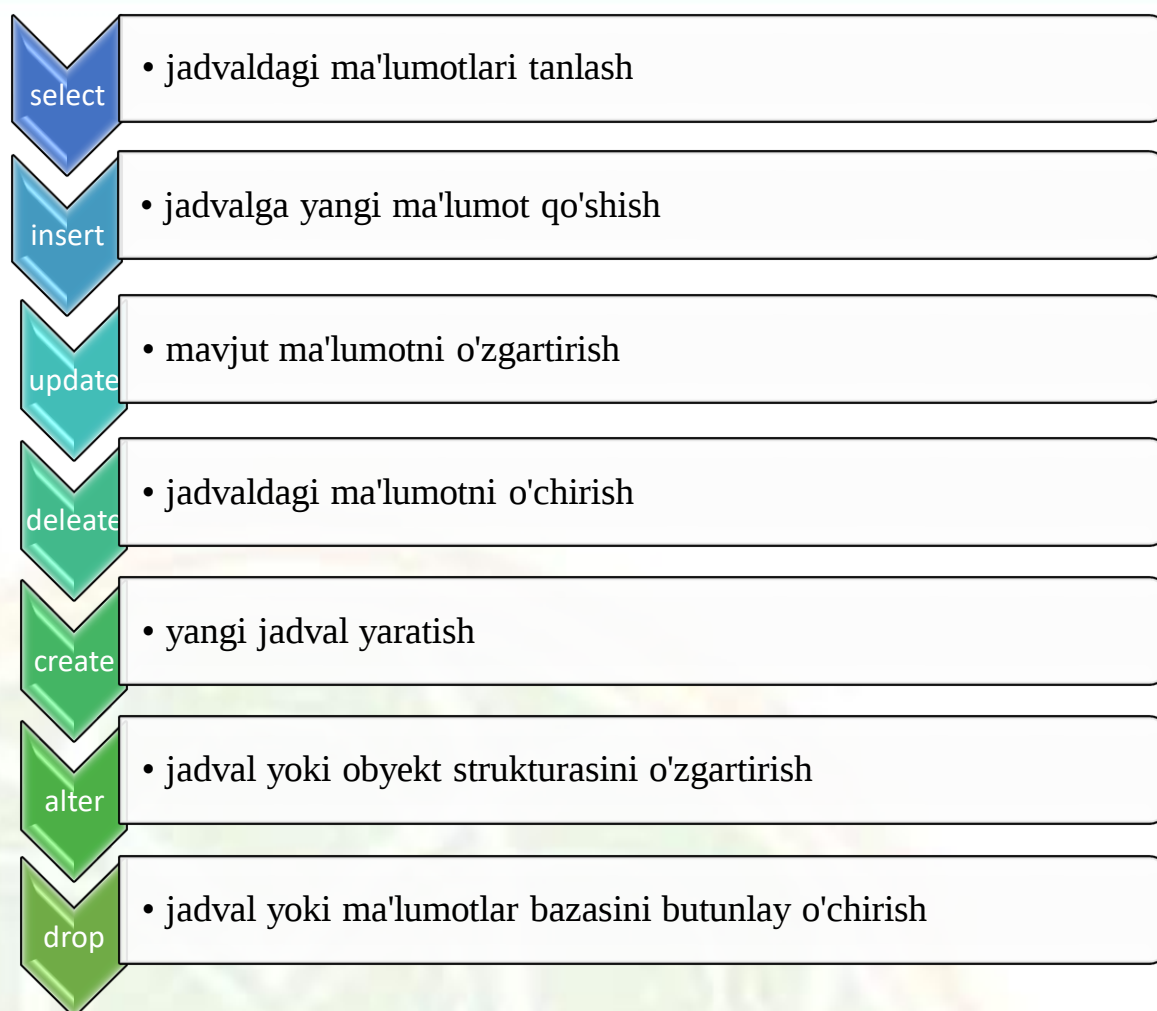
TCL — Transaction Control Language (Tranzaksiyalarni boshqaradi).

SQL buyruqlari:



3-rasm

Vazifalari:



SQL BUYRUQLARI ASOSIDA DASTURLAR YARATISH:

Create buyrug'i asosidagi dastur;

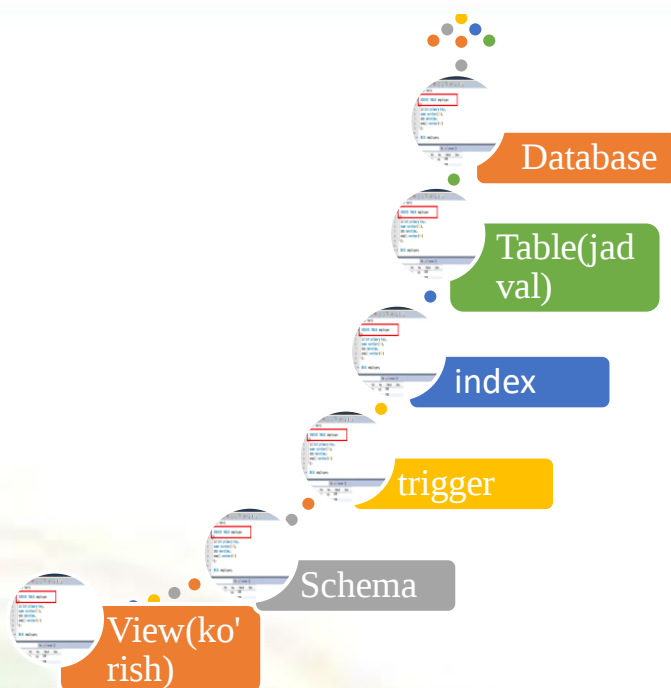
```
mysql> create table talabalar(id_guruh int auto_increment primary key,ism varchar(50) not null,familiya varchar(50) not null);
Query OK, 0 rows affected (0.05 sec)

mysql> desc talabalar;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id_guruh | int    | NO   | PRI | NULL    | auto_increment |
| ism      | varchar(50) | NO   |     | NULL    |                 |
| familiya | varchar(50) | NO   |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> insert into talabalar(ism,familiya) values ('guli','holmatova');
Query OK, 1 row affected (0.01 sec)

mysql> select * from talabalar;
+-----+-----+-----+
| id_guruh | ism   | familiya |
+-----+-----+-----+
| 1        | guli  | holmatova |
+-----+-----+-----+
```

CREATE operatori quyidagi obyektlarni yaratadi:



SQL buyruqlari asosida talaba jadvalini yaratish;

1-bosqich database buyrugidan foydalanib kod tuzamiz.

```
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.0.44 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database diyora;
Query OK, 1 row affected (0.10 sec)

mysql> use diyora;
Database changed
mysql> create table students(student_id int primary key auto_increment,first_name varchar(50) not null,last_name varchar(50) not null,birth_date,group_number varchar(20));
ERROR 1054 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ',group_number varchar(20))' at line 1
mysql> create table students(student_id int primary key auto_increment,first_name varchar(50) not null,last_name varchar(50) not null,birth_date date,group_number varchar(20));
Query OK, 0 rows affected (0.25 sec)

mysql> desc students;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| student_id | int | NO | PRI | NULL | auto_increment |
| first_name | varchar(50) | NO | | NULL | |
| last_name | varchar(50) | NO | | NULL | |
| birth_date | date | YES | | NULL | |
| group_number | varchar(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.02 sec)

mysql> insert into students(first_name,last_name,birth_date,group_number) values ("diyora","jamoliddinova","7","22.11");
ERROR 1054 (42S22): Unknown column 'birth_date' in 'field list'
mysql> insert into students(first_name,last_name,birth_date,group_number) values ("diyora","jamoliddinova","7.03.2004","22.11");
ERROR 1054 (42S22): Unknown column 'birth_date' in 'field list'
mysql> insert into students(first_name,last_name,birth_date,group_number) values ("diyora","jamoliddinova","7-mart","22.11");
```

2-bosqicha talaba ism familasi jadval asosida chiqadi.



```
mysql> desc students;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| student_id | int | NO | PRI | NULL | auto_increment |
| first_name | varchar(50) | NO | | NULL | |
| last_name | varchar(50) | NO | | NULL | |
| birth_data | date | YES | | NULL | |
| group_number | varchar(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select * students;
-> select * students;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'students'
select * students' at line 1
mysql> select * from students;
+-----+-----+-----+-----+-----+
| student_id | first_name | last_name | birth_data | group_number |
+-----+-----+-----+-----+-----+
| 1 | diyora | jamoliddinova | 2004-11-01 | 22.11 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

3-bosqichda talaba jadvaliga **insert** buyrug'i yordamida yangi talaba qoshiladi.

```
mysql> insert into students(first_name,last_name,birth_data,group_number) values ("ozoda","ibrohimova","2004.01.03","22.11");
Query OK, 1 row affected, 1 warning (0.05 sec)

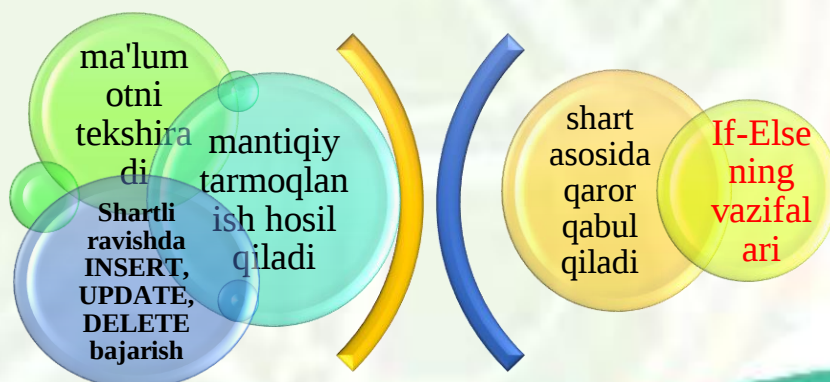
mysql> desc students;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| student_id | int | NO | PRI | NULL | auto_increment |
| first_name | varchar(50) | NO | | NULL | |
| last_name | varchar(50) | NO | | NULL | |
| birth_data | date | YES | | NULL | |
| group_number | varchar(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select * from students;
+-----+-----+-----+-----+-----+
| student_id | first_name | last_name | birth_data | group_number |
+-----+-----+-----+-----+-----+
| 1 | diyora | jamoliddinova | 2004-11-01 | 22.11 |
| 2 | ozoda | ibrohimova | 2004-01-03 | 22.11 |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

IF-ELSE — bu **shartli boshqaruv operatori** bo'lib, u dastur oqimini shartning **rost (TRUE)** yoki **yolg'on (FALSE)** bo'lishiga qarab boshqaradi.

WHILE — bu **tsikl (loop)** operatori bo'lib, shart **TRUE** bo'lib turgan paytda kodni takrorlaydi.

IF-ELSE vazifalari;

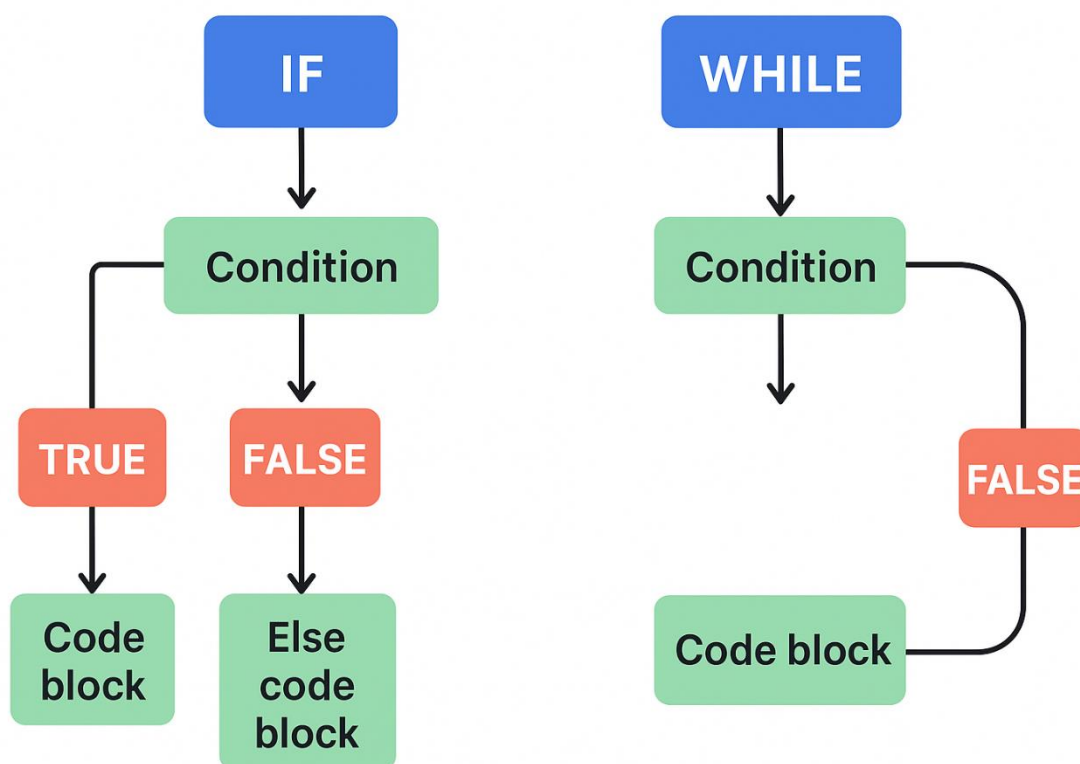




IF-ELSE diagrammasi;

IF-ELSE bir marta qaror qabul qiladi va bitta yo'lni tanlaydi.
(1 martalik shart tekshiruvi).

WHILE — bu takrorlanuvchi jarayon.
(Shart TRUE bo'lib turganicha, kod qayta-qayta ishlaydi).



Xulosa

T-SQL tili asosiy operatorlari — bu SQL Serverda ma'lumotlar bilan ishlashning eng muhim vositalari bo'lib, ular orqali ma'lumot yaratish, o'zgartirish, boshqarish va qayta ishlash jarayonlari aniq va tartibli amalga oshiriladi. **DDL (CREATE, ALTER, DROP)** operatorlari ma'lumotlar bazasi tuzilmasini yaratish va o'zgartirishga xizmat qilsa, **DML (SELECT, INSERT, UPDATE, DELETE)** operatorlari to'g'ridan-to'g'ri ma'lumotlar ustida amallar bajaradi. **T-SQLga xos bo'lgan IF...ELSE, WHILE, TRY...CATCH, DECLARE kabi procedural operatorlar** esa SQL Serverni oddiy SQLdan kuchliroq qilib, dasturlash imkonini beradi.

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