**DATABASE HEALTH CHECKS** & **DB MONITORING**

Database Consistency Check (DBCC) Commands are used to verify the status/health/consistency of the database.

Using DBCC Commands, we can identify the errors, if any in a given database.

**TYPES OF ERRORS IN A DATABASE:**

**ALLOCATION ERRORS** : PERTAIN TO STORAGE. PHYSICAL EXTENT LEVEL. MAY LEAD TO DATA LOSS.

**CONSISTENCY ERRORS**: PERTAIN TO METADATA. MAY LEAD TO PERFORMANCE ISSUES.

**REASONS FOR ALLOCATION ERRORS**:

1. CATASTROPHIC FAILURES [EX: SUDDEN ELECTRIC SHOCKS]

2. BAD SECTORS AT DISK LEVEL [EX: CORRUPTED DISK]

3. VIRUS ATTACK

**REASONS FOR CONSISTENCY ERRORS**:

1. CORRUPTED PRIMARY DATA FILE PAGES [MISSING METADATA INFORMATION]

2. CORRUPTED SYSTEM DATABASES [MISSING SYSTEM TABLES]

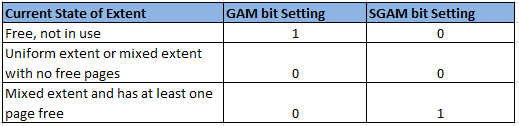
3. OUTDATED OR BAD COMPILED PLANS

Every Database has Filegroup(s). Every Filegroup has Data Pages. Every Data Page has some metadata:

**GAM**: GLOBAL ALLOCATION MAP. bit USED TO IDENTIFY FREE SPACE IN THE PAGE

**SGAM**: SHARED GLOBAL ALLOCATION MAP. bit USED TO IDENTIFY FREE SPACE IN EXTENT

**BIMAP** **INDEX**: THIS IS USED TO IDENTIFY FREE & ALLOCATED PAGES IN EXTENT.



**PFS**: PAGE FREE SPACE. ALLOCATION INFORMATION OF PAGES IN EXTENT.

**DIFF**: INFORMATION ABOUT CHANGES SINCE LATEST FULL BACKUP (**CHANGED/NOT CHANGED)**

**ML** : SPECIFIES RECOVERY MODEL. EITHER MINIMALLY LOGGED OR FULL

POSSIBLE DATABASE STATES:

1. ONLINE : DATABASE IS LIVE, ONLINE. READ WRITE.

2. OFFLINE : DATABASE IS OFFLINE. DB FILES EXIST BUT NOT ACCESSIBLE.

3. RESTORING : DATABASE IS IN THE MID OF RECOVERY. READY FOR RESTORES. BUT NOT ACCESSIBLE.

4. STANDBY : DATABASE IS LIVE, ONLINE. READ ONLY.

5. SINGLE USER : ONLY ONE USER CAN CONNECT TO DATABASE AT A TIME

6. EMERGENCY : NO NEW USER IS ALLOWED TO CONNECT TO THE DATABASE. EXISTING USERS ARE NOT AFFECTED.

7. SUSPECT : A PART OF DATABASE IS EXPECTED TO BE OFFLINE

8. RECOVERY PENDING:DATABASE IS IN RESTORING STATE, BUT FURTHER RESTORES FAIL.