[What is the difference between ad hoc and prepared query in sql server plan cache? - Stack Overflow](https://stackoverflow.com/questions/38072550/what-is-the-difference-between-ad-hoc-and-prepared-query-in-sql-server-plan-cach)

**Adhoc query:**

select \* from t1

**Prepared query:**  
Queries which substitute place holders in place of actual values are called Prepared statements.

**Some Examples:**

select \* from t1 where id=@id

**One more Example taken from wikipedia:**

command.CommandText = "SELECT \* FROM users WHERE USERNAME = @username AND ROOM = @room";

command.Parameters.AddWithValue("@username", username);

command.Parameters.AddWithValue("@room", room);

What should I know about it when trying to optimize the sql server plan cache?

There are whitepapers written about how to optimize plan cache.so i will try to keep it little..

Normally when a query is executed against SQL ,SQL compiles the plan and stores it in the plan cache .This plan cache is memory taken from buffer pool and different versions have different restrictions on [how much amount of memory will be used](http://www.sqlskills.com/blogs/kimberly/plan-cache-and-optimizing-for-adhoc-workloads/)

You know that memory is a precious resource and **no amount of Hardware will be enough if you have leaks**..

Assume you submit queries only once or twice and you tend to submit like this queries a lot.SQL will store the plan of this queries in plan cache which generally bloats [PlanCache](http://www.sqlskills.com/blogs/kimberly/plan-cache-adhoc-workloads-and-clearing-the-single-use-plan-cache-bloat/) which is bad

There are different DMVS which will help you in digging through plan cache..

**Query to find different type of objects are in plan cache :**

select

objtype,count(\*) as countt,sum(size\_in\_bytes)\*1024.0 as memoryinkb

from sys.dm\_exec\_cached\_plans a

What is the difference between ad hoc and prepared plans?

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group by objtype

**Adhoc,prepared queries which are bloating plancache and are used only once:**

select q.query\_hash,

q.number\_of\_entries,

t.text as sample\_query,

p.query\_plan as sample\_plan

from (select top 20 query\_hash,

count(\*) as number\_of\_entries,

min(sql\_handle) as sample\_sql\_handle,

min(plan\_handle) as sample\_plan\_handle

from sys.dm\_exec\_query\_stats

group by query\_hash

having count(\*) > 1

order by count(\*) desc) as q

cross apply sys.dm\_exec\_sql\_text(q.sample\_sql\_handle) as t

cross apply sys.dm\_exec\_query\_plan(q.sample\_plan\_handle) as p

**To Delete statements which are bloating plan cache:**

DECLARE @MB decimal(19,3)

, @Count bigint

, @StrMB nvarchar(20)

SELECT @MB = sum(cast((CASE WHEN usecounts = 1 AND objtype IN ('Adhoc', 'Prepared') THEN size\_in\_bytes ELSE 0 END) as decimal(12,2)))/1024/1024

, @Count = sum(CASE WHEN usecounts = 1 AND objtype IN ('Adhoc', 'Prepared') THEN 1 ELSE 0 END)

, @StrMB = convert(nvarchar(20), @MB)

FROM sys.dm\_exec\_cached\_plans

IF @MB > 10

BEGIN

DBCC FREESYSTEMCACHE('SQL Plans')

RAISERROR ('%s MB was allocated to single-use plan cache. Single-use plans have been cleared.', 10, 1, @StrMB)

END

ELSE

BEGIN

RAISERROR ('Only %s MB is allocated to single-use plan cache – no need to clear cache now.', 10, 1, @StrMB)

— Note: this is only a warning message and not an actual error.

END

go

The above should give you an idea on where to start ,below are the must read topics and references :

1.<http://www.sqlskills.com/blogs/kimberly/category/plan-cache/>

2.<http://sqlblog.com/blogs/kalen_delaney/archive/2007/11/04/did-you-know-sp2-does-not-limit-the-amount-of-plan-cache-you-can-have.aspx>

3.<https://technet.microsoft.com/en-us/library/dd672789(v=sql.100).aspx>

4.[Must read article By SQLCAT on issues customer faced while using Prepare Statements](https://blogs.msdn.microsoft.com/sqlcat/2010/12/21/watch-out-those-prepared-sql-statements/)

In referenced articles above,kimberely suggests to Enable Optimize for Adhoc workloads option,but i suggest test it first.here is an [interesting thread](https://dba.stackexchange.com/questions/35500/why-would-i-not-use-the-sql-server-option-optimize-for-ad-hoc-workloads) on DBA.SE

Thanks, great answer. Since you started elaborating on bloating plancache with adhoc and prepared plans which are used just once. SQL Server offers the option optimize for ad hoc workloads. By setting the option to 1, on first execution the database engine stores only a small compiled plan stub in the plan cache not the full plan.

– [r0tt](https://stackoverflow.com/users/5717207/r0tt)

[CommentedJun 28, 2016 at 11:38](https://stackoverflow.com/questions/38072550/what-is-the-difference-between-ad-hoc-and-prepared-query-in-sql-server-plan-cach" \l "comment63586868_38073734)

* thats nice option,see my updated answer for link of some threads for Optimize for adhoc workloads option

– [TheGameiswar](https://stackoverflow.com/users/2975396/thegameiswar" \o "28,890 reputation)

[CommentedJun 28, 2016 at 11:42](https://stackoverflow.com/questions/38072550/what-is-the-difference-between-ad-hoc-and-prepared-query-in-sql-server-plan-cach" \l "comment63587004_38073734)