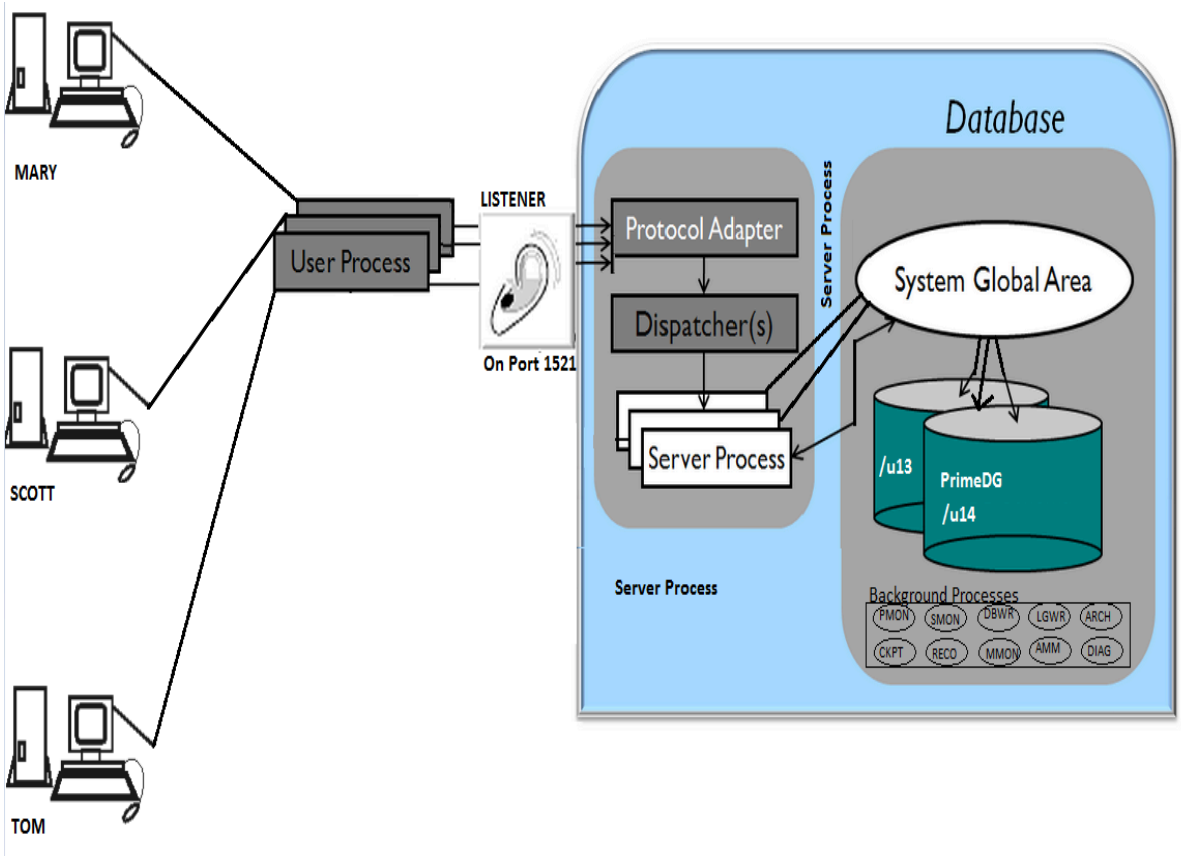
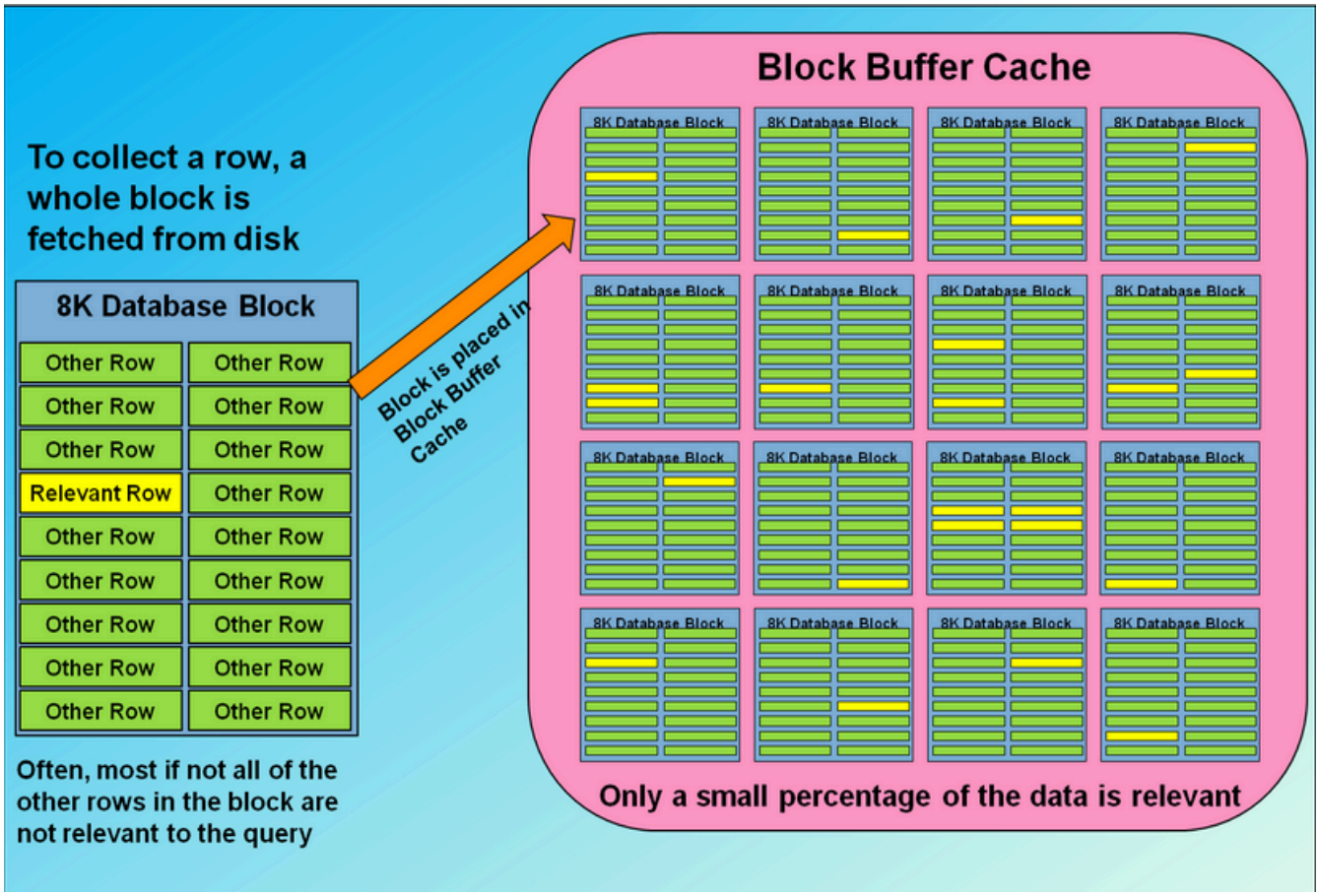
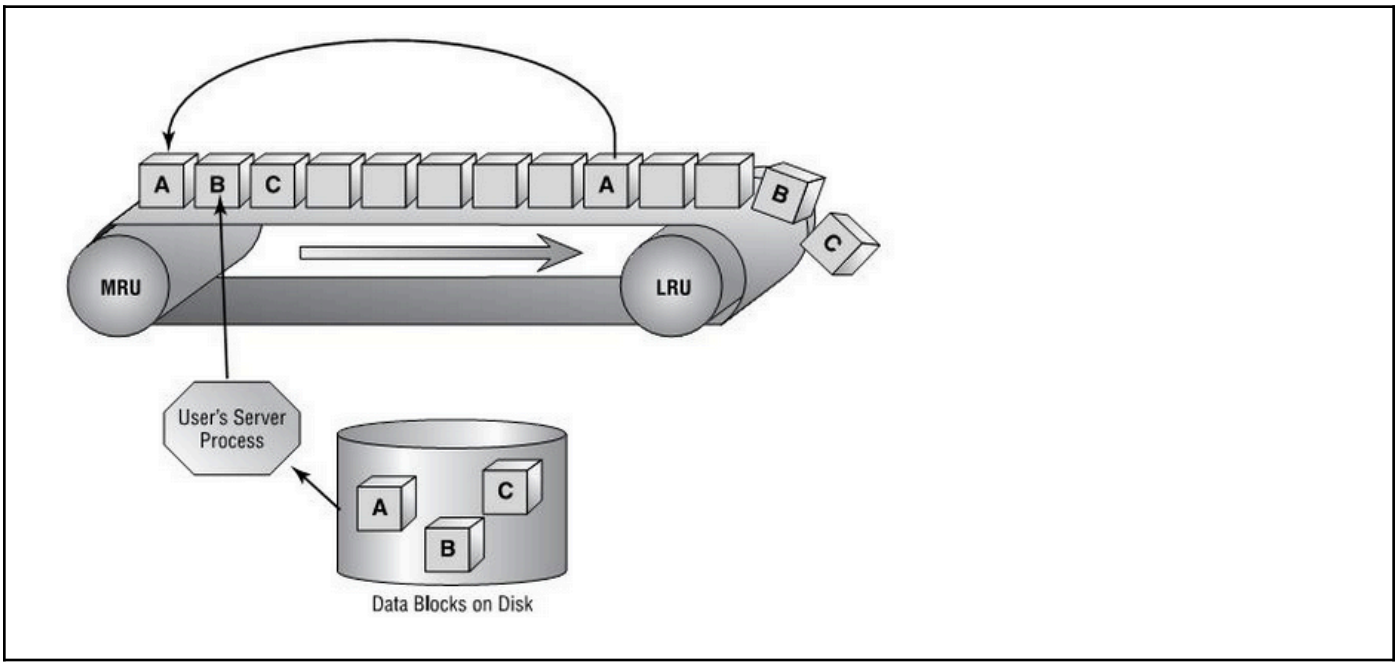
This document is still under construction...

Describe all the steps Scott's connection has to go through when he runs "select empno, ename, sal from emp where empno=1111;"

1. Scott opens up his laptop
2. Login to his laptop
3. Since this is the new laptop, he wanted to verify if the Oracle 11g client is installed. He starts command prompt and type "sqlplus". Client is not installed.
4. He downloads 11g R2 Client binaries from Oracle's site. Installation is done.
5. Using netca, he creates an tnsentry for PrimeDG database.
6. He again starts cmd and runs the following to connect to PrimeDG database
    a. tnsping PrimeDG → this will verify the connectivity to the database server. All good
    b. sqlplus scott/abc123@PrimeDG → he is now connected to the listener, listener forwards the connection to DB instance. All good now.
7. 



How does the MRU/LRU works?



1. To check the size of SGA, PGA & Memory (11g) parameter

```
clear scr
set linesize 200
set pagesize 200
col name format a20
col value format a20
select
 inst_id,
 name,
 --round(value/1024/1024/1024,2) as Size_in_GB from gv$parameter
 round(value/1024/1024,2) as Size_in_MB from gv$parameter
where
 name like 'sga%' or name like 'pga%' or name like 'memory%' order by 2;
```

```
SQL>
   INST_ID NAME                 SIZE_IN_MB
---------- -------------------- ----------
         1 memory_max_target             0
         1 memory_target                 0
         1 pga_aggregate_limit        8192
         1 pga_aggregate_target       4096
         1 sga_max_size               1312
         1 sga_min_size                  0
         1 sga_target                  912

7 rows selected.

SQL>
```

2. SGA Memory Allocation

```
clear scr
"ttitle left ""SGA Memory Allocation""
set linesize 200
set pagesize 30
col name format a40
col size_in_mb format 9,999.99
clear scr
select name, round(bytes/1024/1024,2) size_in_MB,RESIZEABLE from v$sgainfo
order by 2 desc;
set pagesize 24
set linesize 80
ttitle off
```

```
SQL>
NAME                                     SIZE_IN_MB RES
---------------------------------------- ---------- ---
Maximum SGA Size                          1,312.00 No
Shared Pool Size                            464.00 Yes
Free SGA Memory Available                   400.00
Buffer Cache Size                           336.00 Yes
Startup overhead in Shared Pool             286.48 No
Large Pool Size                              80.00 Yes
Shared IO Pool Size                          32.00 Yes
Java Pool Size                               16.00 Yes
Granule Size                                 16.00 No
Fixed SGA Size                                8.22 No
Redo Buffers                                  7.78 No
Data Transfer Cache Size                       .00 Yes
In-Memory Area Size                            .00 No
Streams Pool Size                              .00 Yes

14 rows selected
```

3. To check the free memory in SGA

```
select current_size/1024/1024 Free_SGA_Memory_MB from
V$SGA_DYNAMIC_FREE_MEMORY;
```

4. The following Oracle Database10g views provide information about the SGA components and their dynamic resizing:

VIEW	DESCRIPTION
v$sga	Displays summary information about the system global area (SGA).
v$sgainfo	Displays size information about the SGA, including the sizes of different SGA components, the granule size, and free memory.
v$sgastat	Displays detailed information about the SGA.
v$sga_dynamic_components	Displays information about the dynamic SGA components. This view summarizes information based on all completed SGA resize operations since instance startup.
v$sga_dynamic_free_memory	Displays information about the amount of SGA memory available for future dynamic SGA resize operations.

v$sga_resize_ops	Displays information about the last 100 completed SGA resize operations.
v$sga_current_resize_ops	Displays information about SGA resize operations which are currently in progress. An operation can be a grow or a shrink of a dynamic SGA component.

5. Using Oracle data Buffer Cache Advice

From http://www.dba-oracle.com/art_builder_buffers.htm

```
set linesize 200
set pagesize 200
column c1 heading 'Cache Size (meg)' format 999,999,999,999
select
   size_for_estimate,
   buffers_for_estimate,
   estd_physical_read_factor,
   estd_physical_reads
from
   v$db_cache_advice
where
   name = 'DEFAULT'
and
   block_size  = (SELECT value FROM V$PARAMETER
                  WHERE name = 'db_block_size')
and
   advice_status = 'ON';
```

~~6. How much pga is allocated to each session?~~

```
set pages 999;
select
     (1048576+a.value+b.value)/1024/1024   PGA_MB_given_to_each_session
from
   v$parameter a,
   v$parameter b
where
   a.name = 'sort_area_size'
and
   b.name = 'hash_area_size';
```

7.

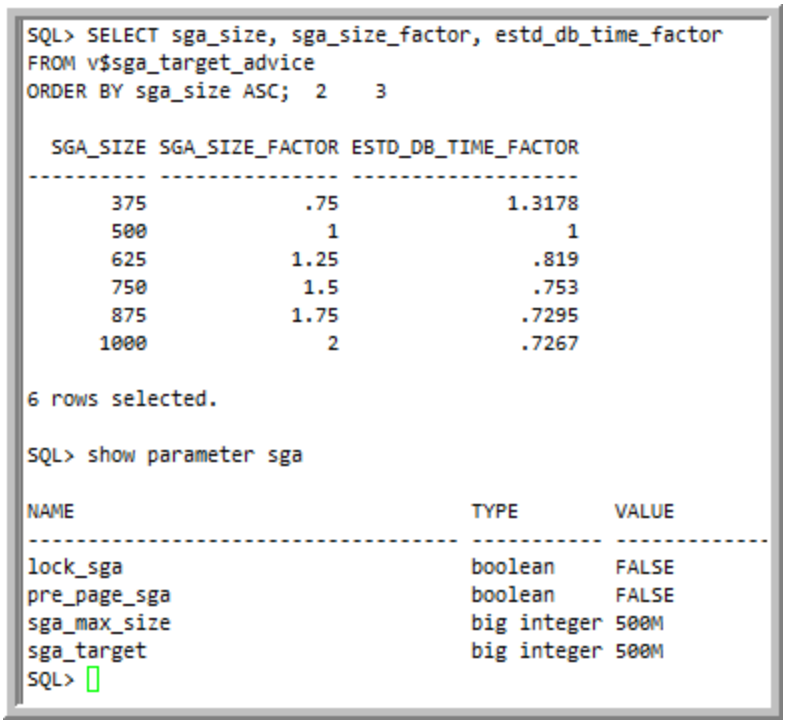
```
set linesize 200
set pagesize 200
```

```
select pool, name, round(bytes/1024,2) Size_IN_KB from v$sgastat where name
= 'free memory';
```

8. How much SGA is good?

```
SELECT
      sga_size,
      sga_size_factor,
      estd_db_time_factor
FROM
      v$sga_target_advice
ORDER BY
      sga_size ASC;
```

Example:
Refer to screenshot below. By increasing the SGA size twice (from current 500 MB to 1000 MB), we can reduce the db_time by approximately 1/4th. For example, any SQL taking 100 second of SGA time can be reduced to 72 seconds.



```
SQL> SELECT sga_size, sga_size_factor, estd_db_time_factor
FROM v$sga_target_advice
ORDER BY sga_size ASC;  2    3

  SGA_SIZE SGA_SIZE_FACTOR ESTD_DB_TIME_FACTOR
---------- --------------- ------------------
       375             .75             1.3178
       500               1                  1
       625            1.25               .819
       750             1.5               .753
       875            1.75              .7295
      1000               2              .7267

6 rows selected.

SQL> show parameter sga

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------
lock_sga                             boolean     FALSE
pre_page_sga                         boolean     FALSE
sga_max_size                         big integer 500M
sga_target                           big integer 500M
SQL>
```

Using Library Cache View:

```
set linesize 200
set pagesize 200
col namespace format a30
```

```
SELECT
      namespace,
      pins,
      pinhits,
      reloads,
      invalidations
FROM
      V$LIBRARYCACHE
ORDER BY
      namespace;
```

NAMESPACE	PINS	PINHITS	RELOADS	INVALIDATIONS
ACCOUNT_STATUS	0	0	0	0
ACL	2	0	0	0
AUDIT POLICY	442	412	0	0
BODY	150300	149827	75	0
CLUSTER	2576	2526	0	0
CMP	1250	232	0	0
DBINSTANCE	0	0	0	0
DBLINK	0	0	0	0
DIRECTORY	27	16	0	0
EDITION	26380	26351	0	0
INDEX	6533	5140	593	0
OBJECT ID	0	0	0	0
PDB	0	0	0	0
PIPE	3	2	0	0
QUEUE	8	4	0	0
RULESET	3	1	1	0
SCHEMA	0	0	0	2
SECURITY CLASS	2	1	0	0
SQL AREA	1432780	1388034	8459	5068
SQL AREA BUILD	0	0	0	0
SQL AREA STATS	15998	5848	2	0
TABLE/PROCEDURE	419181	393568	9196	9
TEMPORARY INDEX	574	0	220	0
TEMPORARY TABLE	1664	0	1337	0
TRIGGER	22913	22746	0	0
USER PRIVILEGE	2	0	0	0

26 rows selected.