University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 4

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Group Number: 33

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Repository Link
https://github.students.cs.ubc.ca/orgs/CPSC304-2023S-T1/teams/project_n5f3w_o2j6l_z4h0n

SQL script
In the github repository, file name: pcPopulation.sql

Project Description
The application is a PHP based platform for users to browse through and select PC components for building custom computers. They will be able to create an account, login, change their passwords, and create multiple PC configurations on their account. They will be able to view and delete their custom configurations, and see some statistics about their builds.

Project Description: changes to schema
Removed NOT NULL statements for components in the configuration table so that users could update their build one component at a time and have unfinished configurations. Corrected VideoCard schema (removed name from VideoCard_R2 as it was redundant). Renamed attributes in VideoCard_R4 for better accuracy and consistency (Chipset -> Name). Corrected table names for SSD and HDD, to specify from just Storage.

Project Description: Copy of schema and screenshots that show data after running SQL initialization script

users(Username varchar(20), Password varchar(40))

- Username and Password NOT NULL

```
SQL> select * from users;

USERNAME             PASSWORD
-------------------- ----------------------------------------
juck123              password123
meowmeow             abcde456
ilovesql             qwerty789
jeff                 passpass
mike23               hello123
mightygiraffe        test456

6 rows selected.
```

Cooler_R1(Name varchar(20), Fanspeed int)

- Fanspeed NOT NULL

```
6 rows selected.

SQL> select * from Cooler_R1;

NAME
--------------------------------------------------------------------------------
  FANSPEED
----------
be quiet! Dark Rock Pro 4
      1500

Noctua NH-U12S chromax.black
      1500

NZXT Kraken X73
      2000


NAME
--------------------------------------------------------------------------------
  FANSPEED
----------
ARCTIC Liquid Freezer II 360
      2000

Thermalright Assassin X 120 Refined SE
      1550

ID-COOLING SE-214-XT
      1550


6 rows selected.

SQL>
```

Cooler_R2(Fanspeed int, Wattage int, Cost decimal(10,2))

- Wattage and Cost NOT NULL

```
SQL> select * from Cooler_R2;

  FANSPEED    WATTAGE       COST
---------- ---------- ----------
      1500         10      89.99
      2000         20     149.99
      1550         10      19.99

SQL>
```

CPU_R1(Name varchar(255), hasStockCooler int, Cost, decimal(10,2), Wattage int)

- hasStockCooler, Cost, Wattage NOT NULL

```
SQL> select * from CPU_R1;

NAME
--------------------------------------------------
HASSTOCKCOOLER       COST    WATTAGE
-------------- ---------- ----------
Intel Core i9-11900K
             1     499.99         95

AMD Ryzen 7 5800X
             0     449.99        105

Intel Core i5-12600K
             1     269.99        125


NAME
--------------------------------------------------
HASSTOCKCOOLER       COST    WATTAGE
-------------- ---------- ----------
AMD Ryzen 9 5950X
             0     799.99        105

Intel Core i7-10700K
             1     399.99        125

AMD Ryzen 5 7600X
             0     299.99         65


6 rows selected.
```

CPU_R2 (Name varchar(255), BaseClock decimal(5,2), CoreCount int)

- BaseClock and CoreCount NOT NULL

```
SQL> select * from CPU_R2;

NAME
----------------------------------------
 BASECLOCK  CORECOUNT
---------- ----------
Intel Core i9-11900K
       3.6          8

AMD Ryzen 7 5800X
       3.8          8

Intel Core i5-12600K
       3.9          6


NAME
----------------------------------------
 BASECLOCK  CORECOUNT
---------- ----------
AMD Ryzen 9 5950X
       3.4         16

Intel Core i7-10700K
       3.8          8

AMD Ryzen 5 7600X
       3.7          6


6 rows selected.
```

Motherboard_R2 (Name varchar(255), MemorySlots int, MaxMemory int)

- MemorySlots and MaxMemory NOT NULL

```
SQL> select * from Motherboard_R2;

NAME
----------------------------------------
MEMORYSLOTS  MAXMEMORY
----------- ----------
ASUS ROG Strix X570-E Gaming
          4        128

GIGABYTE B550 AORUS PRO
          4        128

MSI MAG B460 TOMAHAWK
          4        128


NAME
----------------------------------------
MEMORYSLOTS  MAXMEMORY
----------- ----------
ASRock B450M PRO4
          4         64

ASUS PRIME Z590-A
          4        128

MSI MPG X570 GAMING PLUS
          4        128


6 rows selected.

SQL>
```

Motherboard_R3 (Name varchar(255), SocketType varchar(50), FormFactor varchar(50), Cost decimal(10,2))

- SocketType, FormFactor, and Cost NOT NULL

```
SQL> select * from Motherboard_R3;

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                               COST
-------------------------------------------------- ----------
ASUS ROG Strix X570-E Gaming
AM4
ATX                                                     299.99

GIGABYTE B550 AORUS PRO
AM4
ATX                                                     179.99

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                               COST
-------------------------------------------------- ----------

MSI MAG B460 TOMAHAWK
LGA1200
ATX                                                     129.99

ASRock B450M PRO4
AM4

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                               COST
-------------------------------------------------- ----------
Micro ATX                                                89.99

ASUS PRIME Z590-A
LGA1200
ATX                                                     249.99

MSI MPG X570 GAMING PLUS

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                               COST
-------------------------------------------------- ----------
AM4
ATX                                                     169.99


6 rows selected.
```

Motherboard_R4 (FormFactor varchar(50), MemorySlots int)

- MemorySlots NOT NULL

```
SQL> select * from Motherboard_R4;

FORMFACTOR                                         MEMORYSLOTS
-------------------------------------------------- -----------
ATX                                                          4
Micro ATX                                                    2

SQL>
```

PowerSupply_R1 (Name varchar(255), Rating varchar(50), Wattage int)

- Rating and Wattage NOT NULL

```
SQL> select * from PowerSupply_R1;

NAME
--------------------------------------------------------------------------------
RATING                                             WATTAGE
-------------------------------------------------- ----------
EVGA SuperNOVA 750 G5
80 Plus Gold                                              750

Corsair RM750x
80 Plus Gold                                              750

Seasonic Focus GX-650
80 Plus Gold                                              650


NAME
--------------------------------------------------------------------------------
RATING                                             WATTAGE
-------------------------------------------------- ----------
NZXT C850
80 Plus Platinum                                          850

Thermaltake Toughpower Grand RGB 750W
80 Plus Gold                                              750

Cooler Master MWE Gold 650 V2
80 Plus Gold                                              650


6 rows selected.
```

PowerSupply_R2 (Rating varchar(50), Wattage int, Cost decimal(10,2))

- Wattage and Cost NOT NULL

```
SQL> select * from PowerSupply_R2;

RATING                                             WATTAGE       COST
-------------------------------------------------- ---------- ----------
80 Plus Gold                                              750     129.99
80 Plus Platinum                                          850     249.99
80 Plus Gold                                              650     119.99
80 Plus Bronze                                            550      89.99
80 Plus Bronze                                            450      69.99
```

VideoCard_R2 (Memory int, Cost decimal(10,2))

- Cost NOT NULL

```
SQL> select * from VideoCard_R2;

    MEMORY       COST
---------- ----------
        10     699.99
        16     649.99
        12     499.99
         8     399.99
        24    1999.99

SQL>
```

VideoCard_R3 (Name varchar(255), Memory int, Wattage int, MemoryType varchar(50))

- Memory, Wattage, and MemoryType NOT NULL

```
SQL> select * from VideoCard_R3;

NAME
--------------------------------------------------------------------------------
    MEMORY    WATTAGE MEMORYTYPE
---------- ---------- --------------------------------------------------
NVIDIA GeForce RTX 3080
        10        250 GDDR6X

AMD Radeon RX 6800 XT
        16        250 GDDR6

NVIDIA GeForce RTX 4070 Ti
        12        285 GDDR6X


NAME
--------------------------------------------------------------------------------
    MEMORY    WATTAGE MEMORYTYPE
---------- ---------- --------------------------------------------------
AMD Radeon RX 6700 XT
        12        250 GDDR6

NVIDIA GeForce RTX 3060 Ti
         8        250 GDDR6

NVIDIA GeForce RTX 4090
        24        450 GDDR6X


6 rows selected.
```

VideoCard_R4 (Name varchar(50), Brand varchar(255))

- Brand NOT NULL

```
SQL> select * from VideoCard_R4;

NAME
--------------------------------------------------
BRAND
----------------------------------------------------------------
NVIDIA GeForce RTX 3080
NVIDIA

AMD Radeon RX 6800 XT
AMD

NVIDIA GeForce RTX 4070 Ti
NVIDIA


NAME
--------------------------------------------------
BRAND
----------------------------------------------------------------
AMD Radeon RX 6700 XT
AMD

NVIDIA GeForce RTX 3060 Ti
NVIDIA

NVIDIA GeForce RTX 4090
NVIDIA


6 rows selected.
```

Memory_R1 (Name varchar(255), Type varchar(50), Amount int, ClockSpeed int)

- Type, Amount, and ClockSpeed NOT NULL

```
SQL> select * from Memory_R1;

NAME
--------------------------------------------------------------------------------
TYPE                                                AMOUNT CLOCKSPEED
-------------------------------------------------- ---------- ----------
Corsair Vengeance LPX
DDR4                                                    16       3200

G.Skill Trident Z RGB
DDR4                                                    16       3600

Crucial Ballistix
DDR4                                                    16       3200


NAME
--------------------------------------------------------------------------------
TYPE                                                AMOUNT CLOCKSPEED
-------------------------------------------------- ---------- ----------
G.Skill Flare X 5
DDR5                                                    32       6000

Team T-Force Delta RGB
DDR4                                                    16       3200

Corsair Vengeance 32 GB
DDR5                                                    32       6000


6 rows selected.
```

Memory_R2 (Type varchar(50), Amount int, ClockSpeed int, Cost decimal(10,2))

- Amount, ClockSpeed, and Cost NOT NULL

```
SQL> select * from Memory_R2;

TYPE                                               AMOUNT CLOCKSPEED
-------------------------------------------------- ---------- ----------
      COST
----------
DDR4                                                   16       3200
     79.99

DDR4                                                   16       3600
     99.99

DDR4                                                   32       6000
     99.99
```

SSD_R1 (Name varchar(255), Capacity int, Type varchar(255))

- Capacity NOT NULL

```
SQL> select * from SSD_R1;

NAME
--------------------------------------------------------------------------------
  CAPACITY
----------
TYPE
--------------------------------------------------------------------------------
Samsung 970 EVO Plus
      1000
M.2 PCIe 3.0 X4

Crucial MX500
      2000
SATA 6.0Gb/s

NAME
--------------------------------------------------------------------------------
  CAPACITY
----------
TYPE
--------------------------------------------------------------------------------

Samsung 980 Pro
      1000
M.2 PCIe 3.0 X4

Kingston NV2
      1000

NAME
--------------------------------------------------------------------------------
  CAPACITY
----------
TYPE
--------------------------------------------------------------------------------
M.2 PCIe 4.0 X4

Crucial P5 Plus
      2000
M.2 PCIe 4.0 X4

Sabrent Rocket 4 Plus

NAME
--------------------------------------------------------------------------------
  CAPACITY
----------
TYPE
--------------------------------------------------------------------------------
      8000
M.2 PCIe 4.0 X4


6 rows selected.
```

SSD_R2 (Capacity int, Cost decimal(10,2))

- Capacity NOT NULL

```
SQL> select * from SSD_R2;

  CAPACITY       COST
---------- ----------
      1000      59.99
      2000      84.99
      8000     999.99

SQL>
```

HDD_R1 (Name varchar(255), Capacity int, RPM int)

- Capacity and RPM NOT NULL

```
SQL> select * from HDD_R1;

NAME
----------------------------------------
  CAPACITY        RPM
---------- ----------
Western Digital Caviar Blue
      1000       7200

Western Digital Blue
      2000       7200

Toshiba DT01ACA100
      1000       7200


NAME
----------------------------------------
  CAPACITY        RPM
---------- ----------
Seagate Barracuda Compute
      2000       7200

Seagate Barracuda
      4000       5400

Seagate IronWolf Pro NAS
     22000       7200


6 rows selected.
```

HDD_R2 (Capacity int, Cost decimal(10,2))

- Capacity NOT NULL

```
SQL> select * from HDD_R2;

  CAPACITY       COST
---------- ----------
      1000      34.99
      2000      49.99
      4000      59.99
     22000     352.99

SQL>
```

Case_R1 (Cost decimal(10,2), Name varchar(255), Type varchar(50))

- Cost and Type NOT NULL

```
SQL> select * from Case_R1;

      COST
----------
NAME
--------------------------------------------------
TYPE
--------------------------------------------------
     99.99
NZXT H710i
ATX Mid Tower

     79.99
Fractal Design Meshify C
ATX Mid Tower

      COST
----------
NAME
--------------------------------------------------
TYPE
--------------------------------------------------

    149.99
Corsair Obsidian 500D
ATX Full Tower

     69.99
Phanteks Eclipse P300

      COST
----------
NAME
--------------------------------------------------
TYPE
--------------------------------------------------
ATX Mid Tower

     89.99
Cooler Master MasterBox MB511
ATX Mid Tower

     59.99

      COST
----------
NAME
--------------------------------------------------
TYPE
--------------------------------------------------
Thermaltake Versa H17
Micro ATX


6 rows selected.
```

Case_R2 (Type varchar(50), FormFactor varchar(50))

- FormFactor NOT NULL

```
SQL> select * from Case_R2;

TYPE
--------------------------------------------------
FORMFACTOR
--------------------------------------------------
ATX Mid Tower
ATX

ATX Full Tower
ATX

Micro ATX
Micro ATX
```

configuration(Username varchar(20), ConfigurationName varchar(20),**Cooler** varchar(255), **CPU** varchar(255), **Motherboard** varchar(255), **PowerSupply** varchar(255), **VideoCard** varchar(255), **Memory** varchar(255), **SSD** varchar(255), **HDD** varchar(255), **CaseName** varchar(255))

- ConfigurationName NOT NULL

Did not include all entries from configuration table, would take too much space. Used describe and count instead.

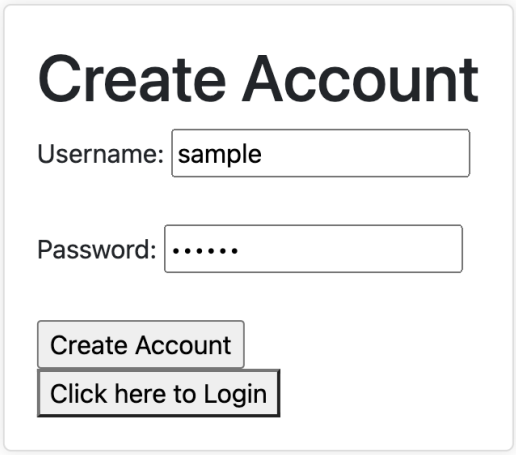
```
SQL> describe configuration;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USERNAME                                  NOT NULL VARCHAR2(20)
 CONFIGURATIONNAME                         NOT NULL VARCHAR2(20)
 COOLER                                             VARCHAR2(255)
 CPU                                                VARCHAR2(255)
 MOTHERBOARD                                        VARCHAR2(255)
 POWERSUPPLY                                        VARCHAR2(255)
 VIDEOCARD                                          VARCHAR2(255)
 MEMORY                                             VARCHAR2(255)
 SSD                                                VARCHAR2(255)
 HDD                                                VARCHAR2(255)
 CASENAME                                           VARCHAR2(255)
```

```
SQL> select count(*) from configuration;

  COUNT(*)
----------
         5
```

SQL Screenshots for Queries:

Insert Operation (inserting a sample user): createAccount.php



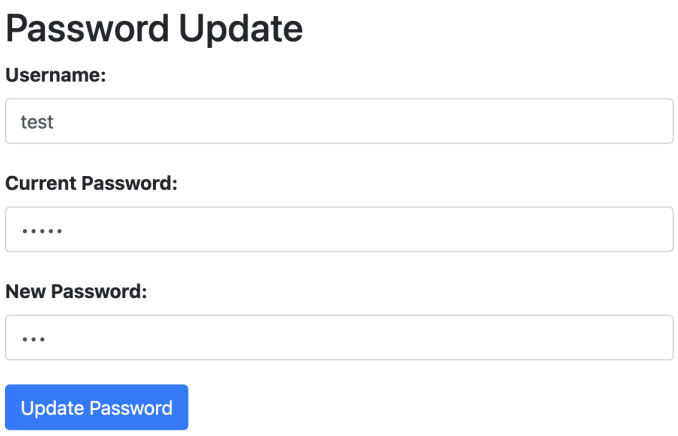

```
SQL> SELECT * FROM users WHERE username = 'sample';

no rows selected

SQL> SELECT * FROM users WHERE username = 'sample';

USERNAME             PASSWORD
-------------------- ----------------------------------------
sample               sample
```

Update Operation: passwordUpdate.php




```
SQL> SELECT * FROM users WHERE username = 'test';

USERNAME             PASSWORD
-------------------- ----------------------------------------
test                 test2

SQL> SELECT * FROM users WHERE username = 'test';

USERNAME             PASSWORD
-------------------- ----------------------------------------
test                 new
```

Delete Operation: configuration.php

```
SQL> DESCRIBE configuration;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USERNAME                                  NOT NULL VARCHAR2(20)
 CONFIGURATIONNAME                         NOT NULL VARCHAR2(20)
 COOLER                                             VARCHAR2(255)
 CPU                                                VARCHAR2(255)
 MOTHERBOARD                                        VARCHAR2(255)
 POWERSUPPLY                                        VARCHAR2(255)
 VIDEOCARD                                          VARCHAR2(255)
 MEMORY                                             VARCHAR2(255)
 SSD                                                VARCHAR2(255)
 HDD                                                VARCHAR2(255)
 CASENAME                                           VARCHAR2(255)

SQL> select count(*) from configuration;

  COUNT(*)
----------
         6

SQL>
0  0  Live Share
```

Name	CPU	Cooler	Motherboard	RAM	Video Card	Storage	Power Supply	Case	Actions
Home Office	AMD Ryzen 9 5950X	ARCTIC Liquid Freezer II 360	ASRock B450M PRO4	G.Skill Flare X 5	AMD Radeon RX 6700 XT	Kingston NV2	NZXT C850	Phanteks Eclipse P300	Delete

Add New Configuration

```
SQL> DESCRIBE configuration;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 USERNAME                                  NOT NULL VARCHAR2(20)
 CONFIGURATIONNAME                         NOT NULL VARCHAR2(20)
 COOLER                                             VARCHAR2(255)
 CPU                                                VARCHAR2(255)
 MOTHERBOARD                                        VARCHAR2(255)
 POWERSUPPLY                                        VARCHAR2(255)
 VIDEOCARD                                          VARCHAR2(255)
 MEMORY                                             VARCHAR2(255)
 SSD                                                VARCHAR2(255)
 HDD                                                VARCHAR2(255)
 CASENAME                                           VARCHAR2(255)

SQL> select count(*) from configuration;

  COUNT(*)
----------
         6

SQL> select count(*) from configuration;

  COUNT(*)
----------
         5

SQL>
```

Selection Operation: configuration.php

```php
    $username = $user_data['USERNAME'];

    // Query for configuration data
    $sql = "SELECT * FROM configuration WHERE username = :username";
    $stmt = oci_parse($conn, $sql);
    oci_bind_by_name($stmt, ':username', $username);
    oci_execute($stmt);
```

Welcome jeff!

Name	CPU	Cooler	Motherboard	RAM	Video Card	Storage	Power Supply	Case	Actions
Home Office	AMD Ryzen 9 5950X	ARCTIC Liquid Freezer II 360	ASRock B450M PRO4	G.Skill Flare X 5	AMD Radeon RX 6700 XT	Kingston NV2	NZXT C850	Phanteks Eclipse P300	Delete
test	AMD Ryzen 7 5800X	Noctua NH-U12S chromax.black	GIGABYTE B550 AORUS PRO	G.Skill Trident Z RGB	NVIDIA GeForce RTX 3080		EVGA SuperNOVA 750 G5		Delete
intel test	Intel Core i9-11900K	be quiet! Dark Rock Pro 4	MSI MAG B460 TOMAHAWK	G.Skill Trident Z RGB	NVIDIA GeForce RTX 4070 Ti	Samsung 980 Pro	EVGA SuperNOVA 750 G5	NZXT H710i	Delete

```
SQL> select count(*) from configuration where Username='jeff';

  COUNT(*)
----------
         3

SQL>
```

Projection Operation: selectCPU.php

```
$sql = "
    SELECT R1.Name, R1.Type, R2.FormFactor, R1.Cost
    FROM Case_R1 R1
    JOIN Case_R2 R2 ON R1.Type = R2.Type
    WHERE (:min_cost IS NULL OR R1.Cost >= :min_cost)
    AND (:max_cost IS NULL OR R1.Cost <= :max_cost)
    AND (:type IS NULL OR R1.Type = :type)
    AND (:form_factor IS NULL OR R2.FormFactor = :form_factor)";
```

Select CPU

Min Cost: Max Cost: Min Core Count: Max Core Count: Filter

Name	Has Stock Cooler	Base Clock	Core Count	Cost	Wattage	Action
Intel Core i9-11900K	Yes	3.6	8	$499.99	95 W	Select this CPU
AMD Ryzen 7 5800X	No	3.8	8	$449.99	105 W	Select this CPU
Intel Core i5-12600K	Yes	3.9	6	$269.99	125 W	Select this CPU
AMD Ryzen 9 5950X	No	3.4	16	$799.99	105 W	Select this CPU
Intel Core i7-10700K	Yes	3.8	8	$399.99	125 W	Select this CPU
AMD Ryzen 5 7600X	No	3.7	6	$299.99	65 W	Select this CPU

Join Operation: selectMotherboard.php

```
$sql = "
    SELECT R2.Name, R4.MemorySlots, R3.SocketType, R3.FormFactor, R3.Cost, R2.MaxMemory
    FROM Motherboard_R2 R2
    JOIN Motherboard_R3 R3 ON R2.Name = R3.Name
    JOIN Motherboard_R4 R4 ON R3.FormFactor = R4.FormFactor
    WHERE (:min_cost IS NULL OR R3.Cost >= :min_cost)
    AND (:max_cost IS NULL OR R3.Cost <= :max_cost)
    AND (:socket_type IS NULL OR R3.SocketType = :socket_type)
    AND (:form_factor IS NULL OR R3.FormFactor = :form_factor)
    AND (:min_memory_slots IS NULL OR R4.MemorySlots >= :min_memory_slots)
    AND (:max_memory_slots IS NULL OR R4.MemorySlots <= :max_memory_slots)
    AND (:max_memory IS NULL OR R2.MaxMemory <= :max_memory)";
```

Select Motherboard

Min Cost: Max Cost: Socket Type: Form Factor:
Min Memory Slots: Max Memory Slots: Max Memory: Filter

Name	Memory Slots	Socket Type	Form Factor	Cost	Max Memory	Action
ASUS ROG Strix X570-E Gaming	4	AM4	ATX	$299.99	128	Select this Motherboard
GIGABYTE B550 AORUS PRO	4	AM4	ATX	$179.99	128	Select this Motherboard
MSI MAG B460 TOMAHAWK	4	LGA1200	ATX	$129.99	128	Select this Motherboard
ASRock B450M PRO4	2	AM4	Micro ATX	$89.99	64	Select this Motherboard
ASUS PRIME Z590-A	4	LGA1200	ATX	$249.99	128	Select this Motherboard
MSI MPG X570 GAMING PLUS	4	AM4	ATX	$169.99	128	Select this Motherboard

```
SQL> select * from Motherboard_R2;

NAME
--------------------------------------------------------------------------------
MEMORYSLOTS  MAXMEMORY
----------- ----------
ASUS ROG Strix X570-E Gaming
          4        128

GIGABYTE B550 AORUS PRO
          4        128

MSI MAG B460 TOMAHAWK
          4        128


NAME
--------------------------------------------------------------------------------
MEMORYSLOTS  MAXMEMORY
----------- ----------
ASRock B450M PRO4
          4         64

ASUS PRIME Z590-A
          4        128

MSI MPG X570 GAMING PLUS
          4        128


6 rows selected.
```

```
SQL> select * from Motherboard_R3;

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                            COST
-------------------------------------------------- ----------
ASUS ROG Strix X570-E Gaming
AM4
ATX                                                   299.99

GIGABYTE B550 AORUS PRO
AM4
ATX                                                   179.99

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                            COST
-------------------------------------------------- ----------

MSI MAG B460 TOMAHAWK
LGA1200
ATX                                                   129.99

ASRock B450M PRO4
AM4

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                            COST
-------------------------------------------------- ----------
Micro ATX                                              89.99

ASUS PRIME Z590-A
LGA1200
ATX                                                   249.99

MSI MPG X570 GAMING PLUS

NAME
--------------------------------------------------------------------------------
SOCKETTYPE
--------------------------------------------------
FORMFACTOR                                            COST
-------------------------------------------------- ----------
AM4
ATX                                                   169.99


6 rows selected.
```

```
SQL> select * from Motherboard_R4;

FORMFACTOR                                         MEMORYSLOTS
-------------------------------------------------- -----------
ATX                                                          4
Micro ATX                                                    2
```

Aggregation with Group By: configuration.php

```php
// Query for CPU counts
$sql = "
    SELECT
        CASE WHEN UPPER(CPU) LIKE '%INTEL%' THEN 'Intel' ELSE 'AMD' END AS CPUManufacturer,
        COUNT(*) AS CPUCOUNT
    FROM configuration
    WHERE username = :username
    GROUP BY CASE WHEN UPPER(CPU) LIKE '%INTEL%' THEN 'Intel' ELSE 'AMD' END";

```

PC builds per CPU manufacturer

CPU Manufacturer	Count
AMD	2
Intel	1

Aggregation with Having: configuration.php

```php
// Query for CPU manufacturers used in more than one build
$sql = "
    SELECT
        CASE WHEN UPPER(CPU) LIKE '%INTEL%' THEN 'Intel' ELSE 'AMD' END AS CPUManufacturer
    FROM configuration
    WHERE username = :username
    GROUP BY CASE WHEN UPPER(CPU) LIKE '%INTEL%' THEN 'Intel' ELSE 'AMD' END
    HAVING COUNT(*) > 1";

```

CPU Manufacturers Used in Multiple Builds

CPU Manufacturer
AMD

Nested Aggregation with Group By:

```php
// Query for average configurations per user
$sql = "
    SELECT AVG(config_count) AS average_configurations_per_user
    FROM (
        SELECT COUNT(*) AS config_count
        FROM configuration
        GROUP BY Username
    )";
```

```
USERNAME             COUNT(*)
-------------------- ----------
ilovesql                      1
jeff                          1
juck123                       1
meowmeow                      1
mightygiraffe                 1
```

Average Configurations Per User

Average Configurations
1

Division:

```
70  // Query for finding users that have created configurations for all cases
71  $sql = "
72      SELECT u.Username
73  FROM users u
74  WHERE NOT EXISTS (
75      SELECT c.Name
76      FROM Case_R1 c
77      WHERE NOT EXISTS (
78          SELECT *
79          FROM configuration co
80          WHERE co.Username = u.Username
81          AND co.CaseName = c.Name
82      )
83  )
84  ";
85
```

```
SQL> select Username, CaseName from configuration where Username='test';

USERNAME
--------------------
CASENAME
--------------------------------------------------------------------------------
test
Fractal Design Meshify C

test
Corsair Obsidian 500D

test
Phanteks Eclipse P300


USERNAME
--------------------
CASENAME
--------------------------------------------------------------------------------
test
Thermaltake Versa H17

test
NZXT H710i

test
Cooler Master MasterBox MB511


6 rows selected.
```

Users With All Cases

Username
test