CAN302 – Technologies for e-commerce

Division of communication and network
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Lab 5 – SPU and SKU

Aim

The aim of this lab is to learn the difference between SPU and SKU and show the product details on webpage.

Tips:

1. If you are not sure why you are doing something, ask a TA. This is what they are here for.

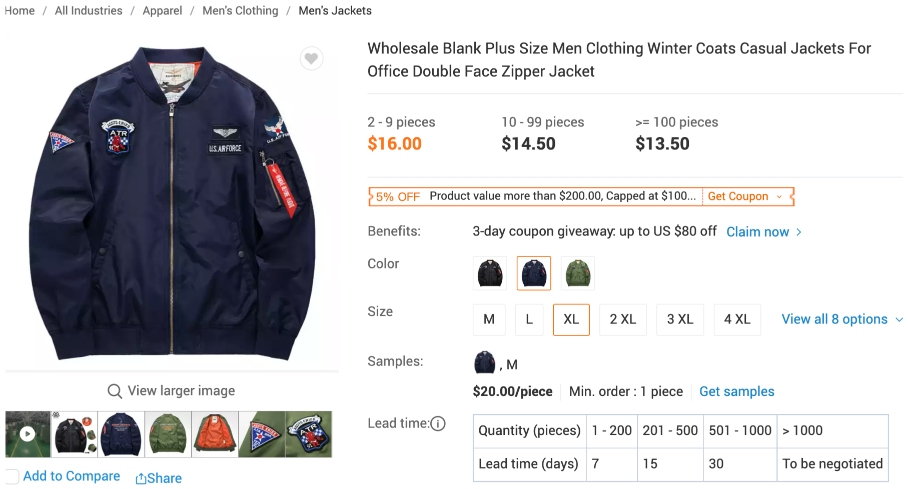
2. The M-Dev-Store online videos are good references while our labs have different focus. If you want to be an expert, you are recommended take both labs and on-line videos.

3. The forums @ LMO are available for questions and discussions.

4. These labs are expected take more than the 2 allocated hours. You should complete them in your own time before the next lab. Practice makes perfect!

SPU and SKU:

1. Till last lab, customers can search products that stored in database. It can be regarded as Standard Product Unit or **SPU**. SPU is the smallest unit of product information aggregation. It is a collection of reusable and easily searchable standardized information. This collection describes the characteristics of a product. But for the same commodity (for example – a Mate50 phone by Huawei), it may have different colour, memory, storage, package and price. For an e-store owner, you cannot manage your inventory by SPU like a Mate50 phone. It must be a specific one like a Black, 128GB Mate50 phone or **SKU** (stock keeping unit).



Home / All Industries / Apparel / Men’s Clothing / Men’s Jackets

Wholesale Blank Plus Size Men Clothing Winter Coats Casual Jackets For Office Double Face Zipper Jacket

2 - 9 pieces	10 - 99 pieces	>= 100 pieces
$16.00	$14.50	$13.50

5% OFF Product value more than $200.00, Capped at $100... Get Coupon

Benefits: 3-day coupon giveaway: up to US $80 off Claim now

Color

Size: M L XL 2 XL 3 XL 4 XL View all 8 options

Samples: , M

$20.00/piece | Min. order : 1 piece | Get samples

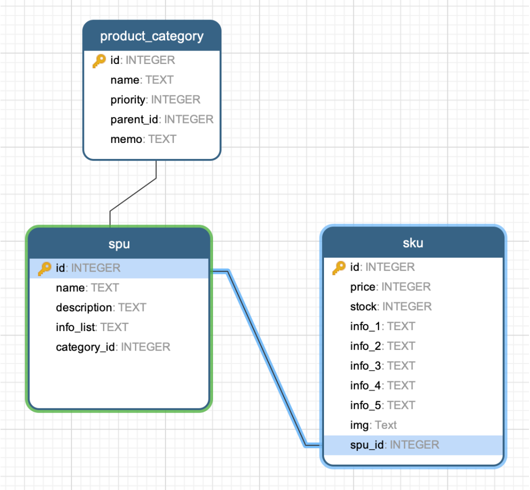
Lead time:

Quantity (pieces)	1 - 200	201 - 500	501 - 1000	> 1000
Lead time (days)	7	15	30	To be negotiated

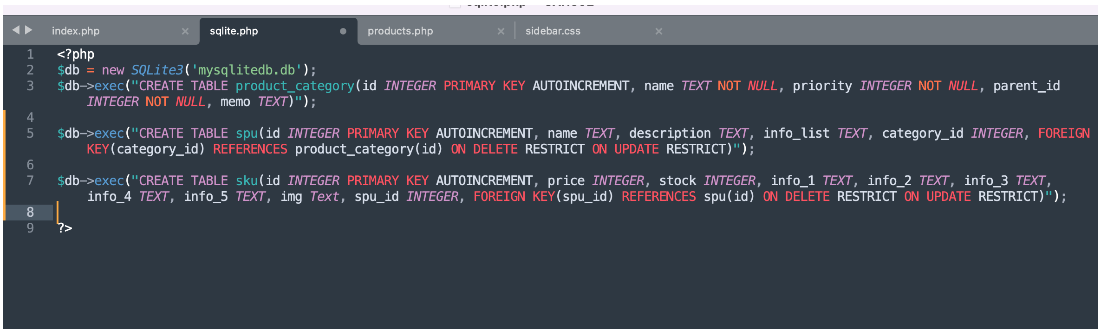
In the above sample, a jacket was shown with options in color and size. We would improve our code to support this function in lab5.

Created Fall 2022-2023
By Dr Ping Zhang

There are many different ways to design the database. One example is as following:



The PHP code to generate the tables is as:

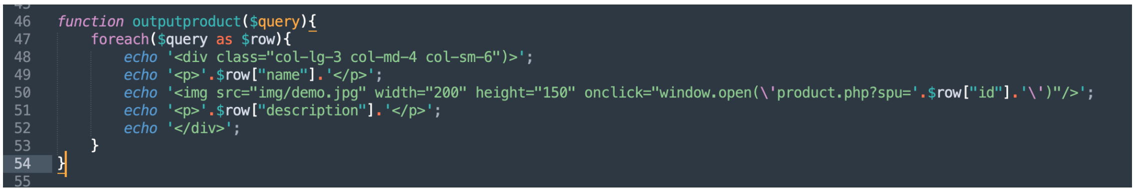


```php
<?php
$db = new SQLite3('mysqlitedb.db');
$db->exec("CREATE TABLE product_category(id INTEGER PRIMARY KEY AUTOINCREMENT, name TEXT NOT NULL, priority INTEGER NOT NULL, parent_id
    INTEGER NOT NULL, memo TEXT)");

$db->exec("CREATE TABLE spu(id INTEGER PRIMARY KEY AUTOINCREMENT, name TEXT, description TEXT, info_list TEXT, category_id INTEGER, FOREIGN
    KEY(category_id) REFERENCES product_category(id) ON DELETE RESTRICT ON UPDATE RESTRICT)");

$db->exec("CREATE TABLE sku(id INTEGER PRIMARY KEY AUTOINCREMENT, price INTEGER, stock INTEGER, info_1 TEXT, info_2 TEXT, info_3 TEXT,
    info_4 TEXT, info_5 TEXT, img Text, spu_id INTEGER, FOREIGN KEY(spu_id) REFERENCES spu(id) ON DELETE RESTRICT ON UPDATE RESTRICT)");

?>
```

Since different products may have different SKU properties. For cloth, it would be colour and size and for phone, it would be colour and storage. So, the sku table would store such information without property. The property information would be stored in the info_list column of spu table. It may sound a little bit confusing. We will explore how it work during this lab.

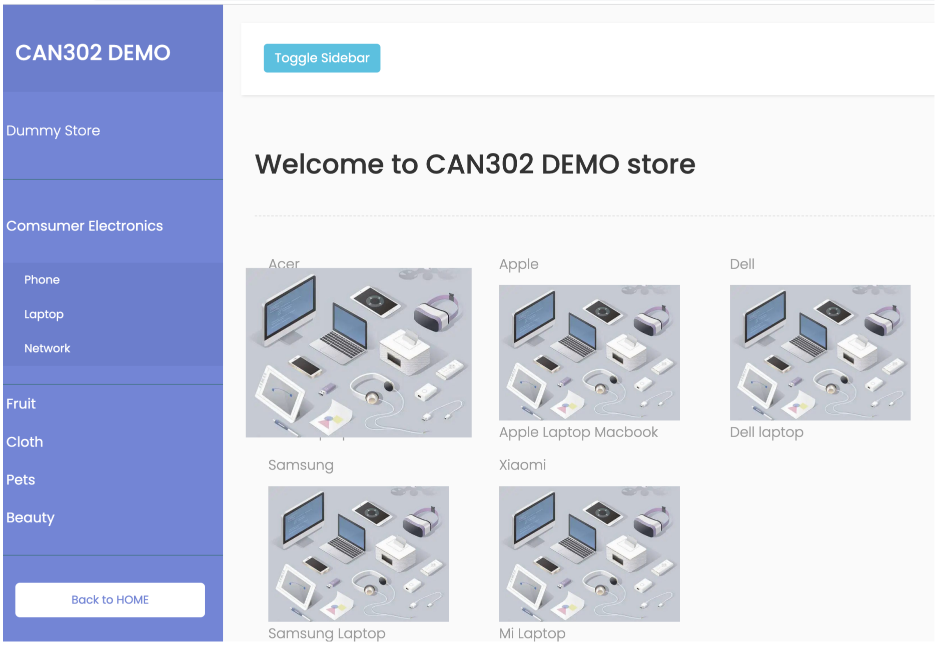
Add the link to product details:

2. In last lab, we can search product by categories or a keyword. We need to adjust the PHP code according to the database adjustment. And add a link to each product then show the details, which is as:

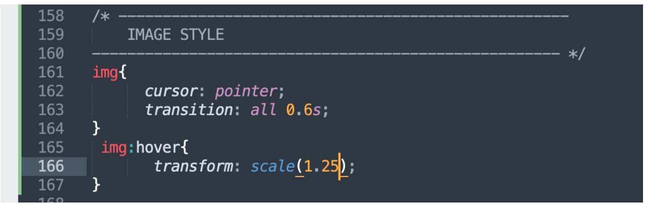


```php
function outputproduct($query){
    foreach($query as $row){
        echo '<div class="col-lg-3 col-md-4 col-sm-6")>';
        echo '<p>'.$row["name"].'</p>';
        echo '<img src="img/demo.jpg" width="200" height="150" onclick="window.open(\'product.php?spu='.$row["id"].'\')"/>';
        echo '<p>'.$row["description"].'</p>';
        echo '</div>';
    }
}
```

Since search by category and keyword search have the same code, it can be written as a new method. The pic of each product is used for the hyperlink with JS function "onclick". We can let customers notice the link by increasing the image size as following:



The css code is need as:

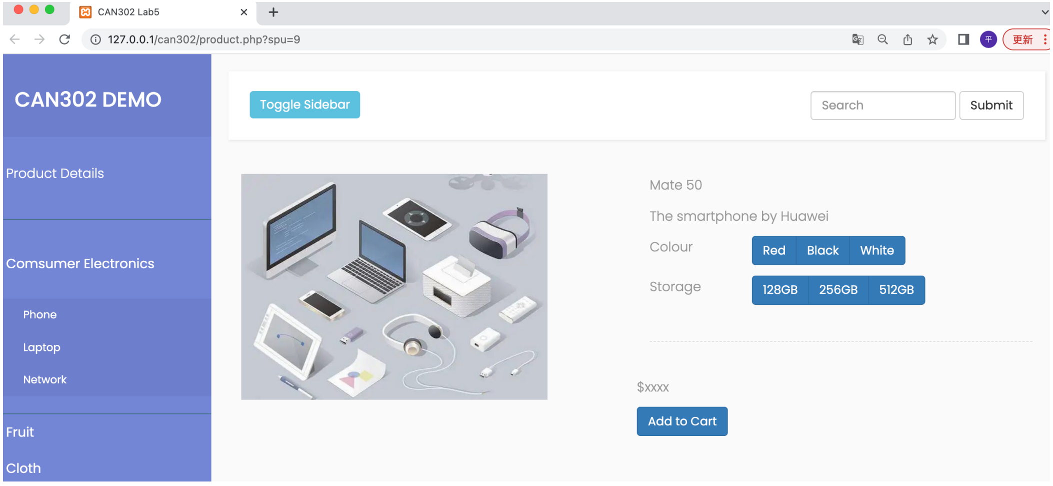


```
/* -----------------------------------------------------
    IMAGE STYLE
----------------------------------------------------- */
img{
      cursor: pointer;
      transition: all 0.6s;
}
 img:hover{
       transform: scale(1.25);
}
```

This is only a demo, you can have your own styles if you want.

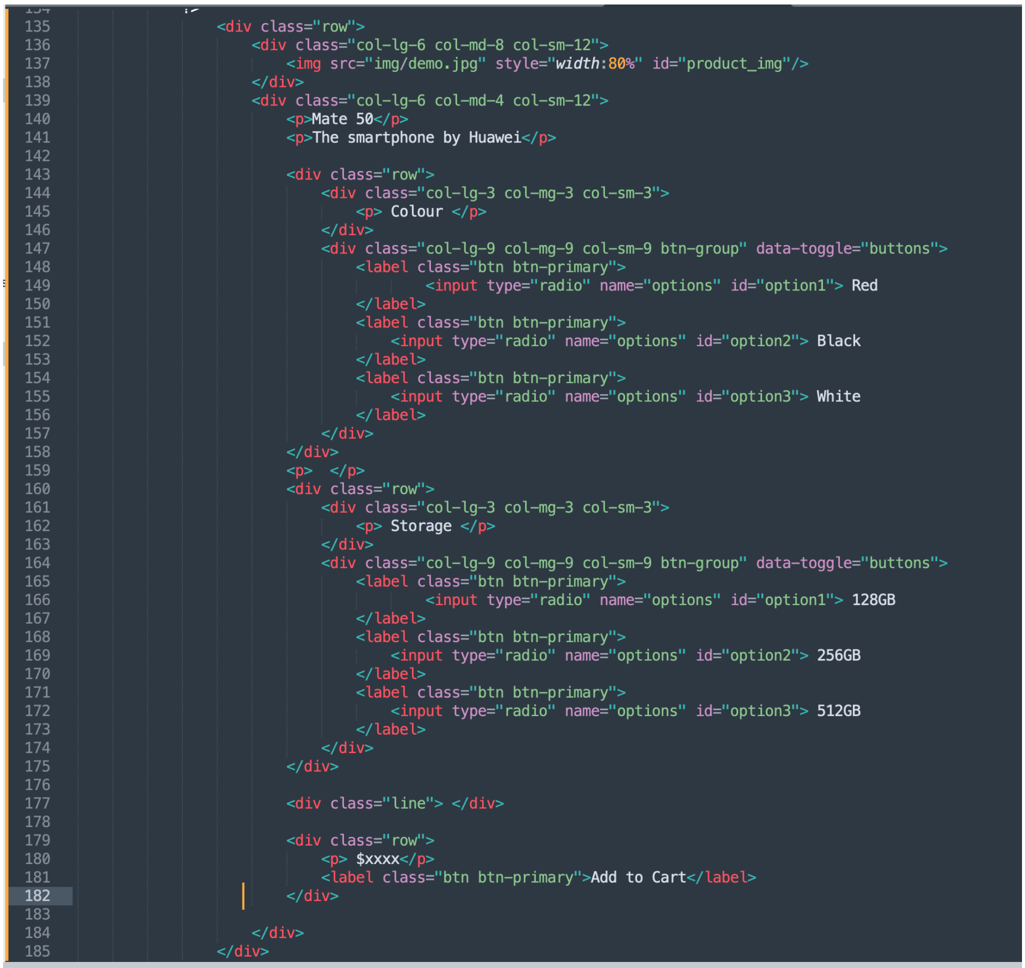
Show the product:

3. Then, we need to have a new page named "product.php" to show product. This page uses the GET parameter "spu" to show the details of corresponding product as following:



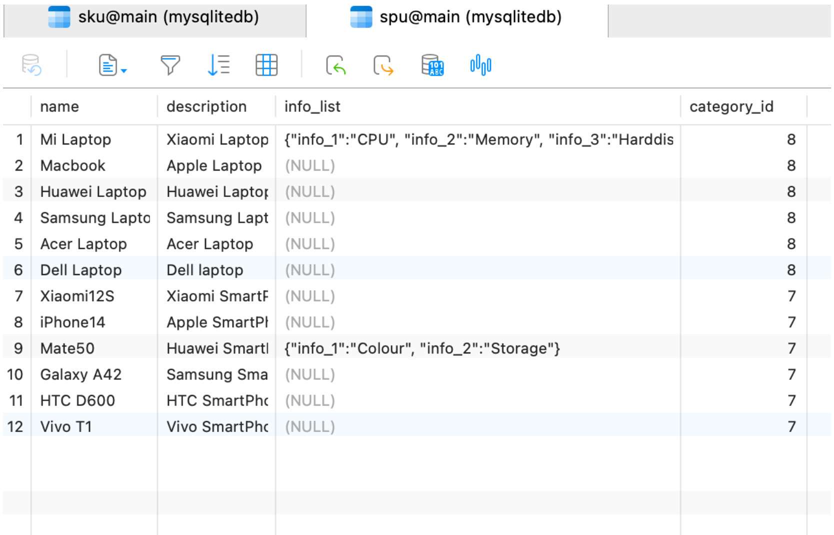
Please notice, user can choose the color and storage of the phone on this page. By the combination of color and storage, this SPU can maximum have 9 SKUs.

The HTML code to show this effect is as:



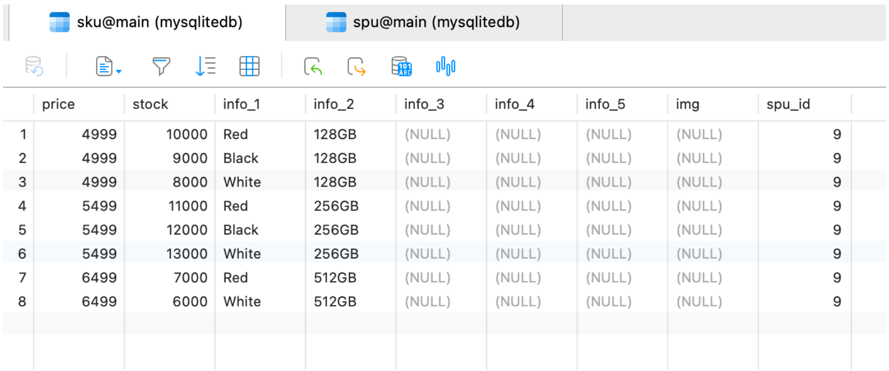
```html
<div class="row">
    <div class="col-lg-6 col-md-8 col-sm-12">
        <img src="img/demo.jpg" style="width:80%" id="product_img"/>
    </div>
    <div class="col-lg-6 col-md-4 col-sm-12">
        <p>Mate 50</p>
        <p>The smartphone by Huawei</p>

        <div class="row">
            <div class="col-lg-3 col-mg-3 col-sm-3">
                <p> Colour </p>
            </div>
            <div class="col-lg-9 col-mg-9 col-sm-9 btn-group" data-toggle="buttons">
                <label class="btn btn-primary">
                        <input type="radio" name="options" id="option1"> Red
                </label>
                <label class="btn btn-primary">
                    <input type="radio" name="options" id="option2"> Black
                </label>
                <label class="btn btn-primary">
                    <input type="radio" name="options" id="option3"> White
                </label>
            </div>
        </div>
        <p>  </p>
        <div class="row">
            <div class="col-lg-3 col-mg-3 col-sm-3">
                <p> Storage </p>
            </div>
            <div class="col-lg-9 col-mg-9 col-sm-9 btn-group" data-toggle="buttons">
                <label class="btn btn-primary">
                        <input type="radio" name="options" id="option1"> 128GB
                </label>
                <label class="btn btn-primary">
                    <input type="radio" name="options" id="option2"> 256GB
                </label>
                <label class="btn btn-primary">
                    <input type="radio" name="options" id="option3"> 512GB
                </label>
            </div>
        </div>

        <div class="line"> </div>

        <div class="row">
            <p> $xxxx</p>
            <label class="btn btn-primary">Add to Cart</label>
        </div>

    </div>
</div>
```

As mentioned earlier, different product may have different properties combinations. A laptop may have different CPU, memory and harddisk… and a phone may have different colour and storage. The information sorted in "spu" table is as:



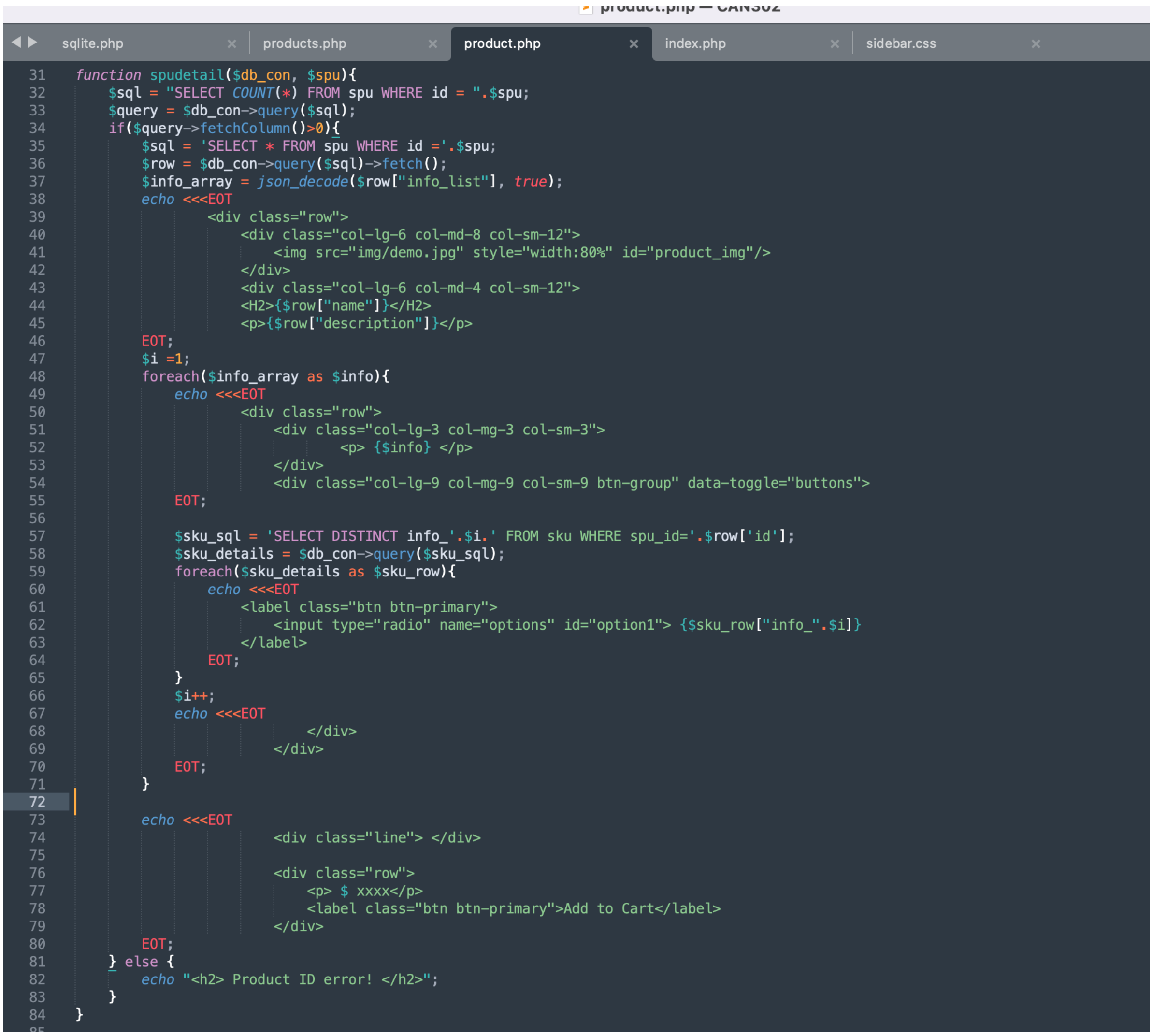
	name	description	info_list	category_id
1	Mi Laptop	Xiaomi Laptop	{"info_1":"CPU", "info_2":"Memory", "info_3":"Harddis	8
2	Macbook	Apple Laptop	(NULL)	8
3	Huawei Laptop	Huawei Laptoр	(NULL)	8
4	Samsung Lapto	Samsung Lapt	(NULL)	8
5	Acer Laptop	Acer Laptop	(NULL)	8
6	Dell Laptop	Dell laptop	(NULL)	8
7	Xiaomi12S	Xiaomi SmartF	(NULL)	7
8	iPhone14	Apple SmartPl	(NULL)	7
9	Mate50	Huawei Smartl	{"info_1":"Colour", "info_2":"Storage"}	7
10	Galaxy A42	Samsung Sma	(NULL)	7
11	HTC D600	HTC SmartPhc	(NULL)	7
12	Vivo T1	Vivo SmartPhc	(NULL)	7

Some sample data (It shows 8 different SKUs of one SPU.) in “sku” table is as:



	price	stock	info_1	info_2	info_3	info_4	info_5	img	spu_id
1	4999	10000	Red	128GB	(NULL)	(NULL)	(NULL)	(NULL)	9
2	4999	9000	Black	128GB	(NULL)	(NULL)	(NULL)	(NULL)	9
3	4999	8000	White	128GB	(NULL)	(NULL)	(NULL)	(NULL)	9
4	5499	11000	Red	256GB	(NULL)	(NULL)	(NULL)	(NULL)	9
5	5499	12000	Black	256GB	(NULL)	(NULL)	(NULL)	(NULL)	9
6	5499	13000	White	256GB	(NULL)	(NULL)	(NULL)	(NULL)	9
7	6499	7000	Red	512GB	(NULL)	(NULL)	(NULL)	(NULL)	9
8	6499	6000	White	512GB	(NULL)	(NULL)	(NULL)	(NULL)	9

To make it dynamic, we need to analysis the “info_list” to know how much properties for this product and get the corresponding option from “sku” table. A demo code is as:



```php
function spudetail($db_con, $spu){
    $sql = "SELECT COUNT(*) FROM spu WHERE id = ".$spu;
    $query = $db_con->query($sql);
    if($query->fetchColumn()>0){
        $sql = 'SELECT * FROM spu WHERE id ='.$spu;
        $row = $db_con->query($sql)->fetch();
        $info_array = json_decode($row["info_list"], true);
        echo <<<EOT
                <div class="row">
                    <div class="col-lg-6 col-md-8 col-sm-12">
                        <img src="img/demo.jpg" style="width:80%" id="product_img"/>
                    </div>
                    <div class="col-lg-6 col-md-4 col-sm-12">
                    <H2>{$row["name"]}</H2>
                    <p>{$row["description"]}</p>
        EOT;
        $i =1;
        foreach($info_array as $info){
            echo <<<EOT
                    <div class="row">
                        <div class="col-lg-3 col-mg-3 col-sm-3">
                                <p> {$info} </p>
                        </div>
                        <div class="col-lg-9 col-mg-9 col-sm-9 btn-group" data-toggle="buttons">
            EOT;

            $sku_sql = 'SELECT DISTINCT info_'.$i.' FROM sku WHERE spu_id='.$row['id'];
            $sku_details = $db_con->query($sku_sql);
            foreach($sku_details as $sku_row){
                echo <<<EOT
                    <label class="btn btn-primary">
                        <input type="radio" name="options" id="option1"> {$sku_row["info_".$i]}
                    </label>
                EOT;
            }
            $i++;
            echo <<<EOT
                            </div>
                        </div>
            EOT;
        }

        echo <<<EOT
                        <div class="line"> </div>

                        <div class="row">
                            <p> $ xxxx</p>
                            <label class="btn btn-primary">Add to Cart</label>
                        </div>
        EOT;
    } else {
        echo "<h2> Product ID error! </h2>";
    }
}
```

Once all properties are selected, the “SKU” would be determined and customer can add it to the shopping-cart! It will be introduced in next lab.