Software Security

Course Work 2

MAHDSE212F-004 S.B.C. Sanjaya

Higher Diploma in Software Engineering 21.2F

Supervisor: Mr. Namal Herath

National Institute of Business Management

2023

"The course work report is submitted in partial fulfilment of the requirement of the Software Security subject for Higher Diploma in Software Engineering of National Institute of Business Management."

Declaration

“We certify that this project does not incorporate without acknowledgement, any material previously submitted for a Higher Diploma in any institution and to the best of our knowledge and belief, it does not contain any material previously published or written by another person or ourselves except where due reference is made in the text. We also hereby give consent for our project report, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations.”

Name	Index Number	Signature
S.B.C. Sanjaya	MAHDSE212F-004	……………

…….…………………………… ……………………………………..

Date

Mr. Namal Herath

Lecturer

Acknowledgement

It is indeed with a great pleasure and immense sense of gratitude that we acknowledge the help of these individuals. We are highly indebted to our lecturer Mr. Namal Herath for the facilities provided to accomplish this Software Security Course Work. He has been a constant source of inspiration for us, and we are very deeply thankful to him for the support and valuable advice.

We are extremely grateful to our National School of Business Management staff members, Lab technicians and non-teaching staff members for their extreme help throughout our Course Work. Finally, we express our heart full thanks to all our friends who helped us in successful completion of this Course Work.

Contents

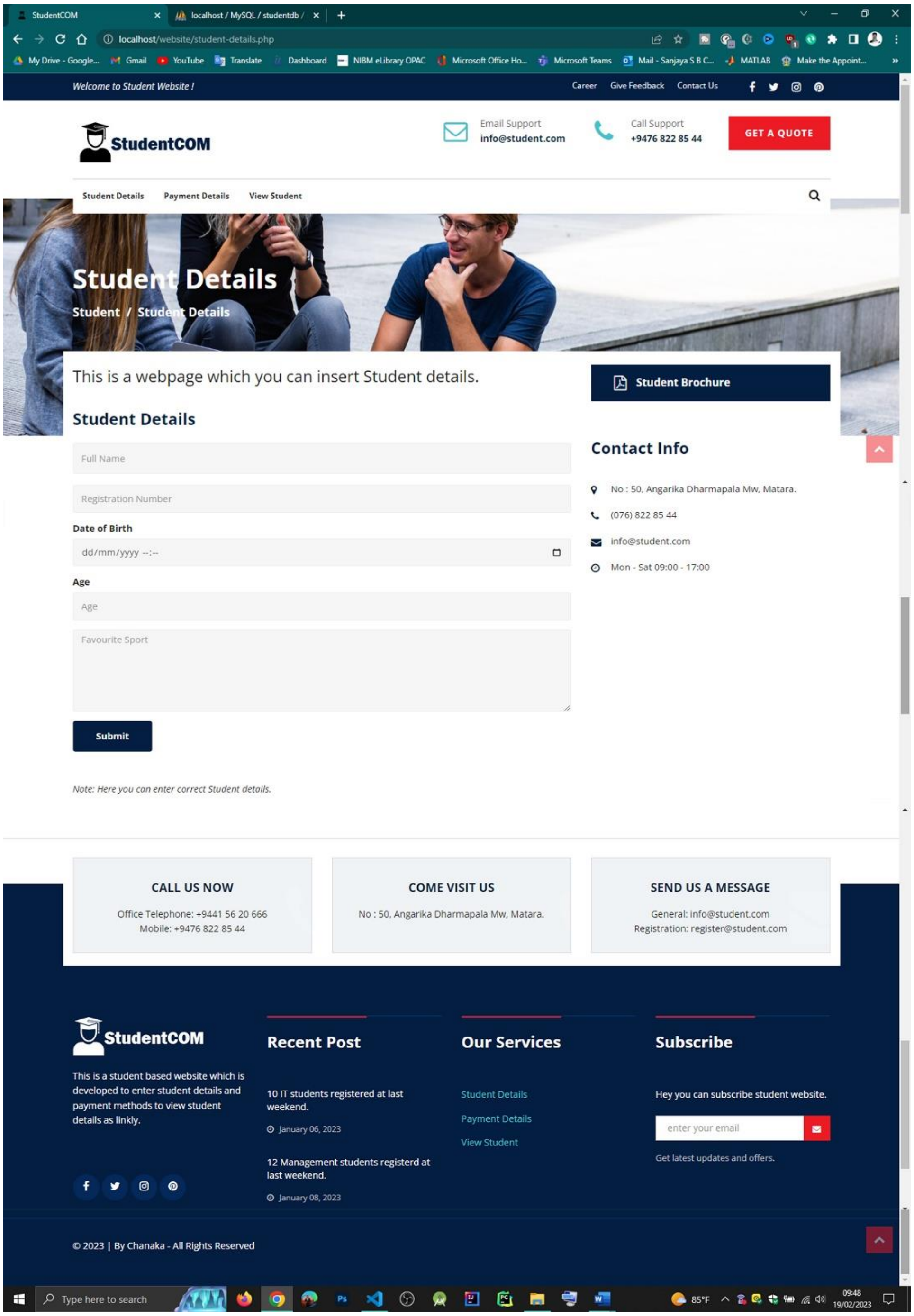
Introduction

This is a web application to get the information from a student with their details and payment details and display the collected information for a registration number. Then I host it on my favorite web server running on my local computer called phpMyAdmin.

Design the form

First, I designed the form, including all the necessary fields such as Student Name, Registration Number, Date of Birth, Age and Favorite Sport. And also I Designed to add fields for payment details such as Card Number, CVV, Expiration Date, Name of the Card Holder and Expire Date.

Page 1



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GET A QUOTE

Student Details Payment Details View Student

Student Details

Student / Student Details

This is a webpage which you can insert Student details.

Student Details

Full Name

Registration Number

Date of Birth

dd/mm/yyyy --:--

Age

Age

Favourite Sport

Submit

Note: Here you can enter correct Student details.

Student Brochure

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

CALL US NOW

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COME VISIT US

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SEND US A MESSAGE

General: info@student.com
Registration: register@student.com

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This is a student based website which is developed to enter student details and payment methods to view student details as linkly.

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12 Management students registerd at last weekend.

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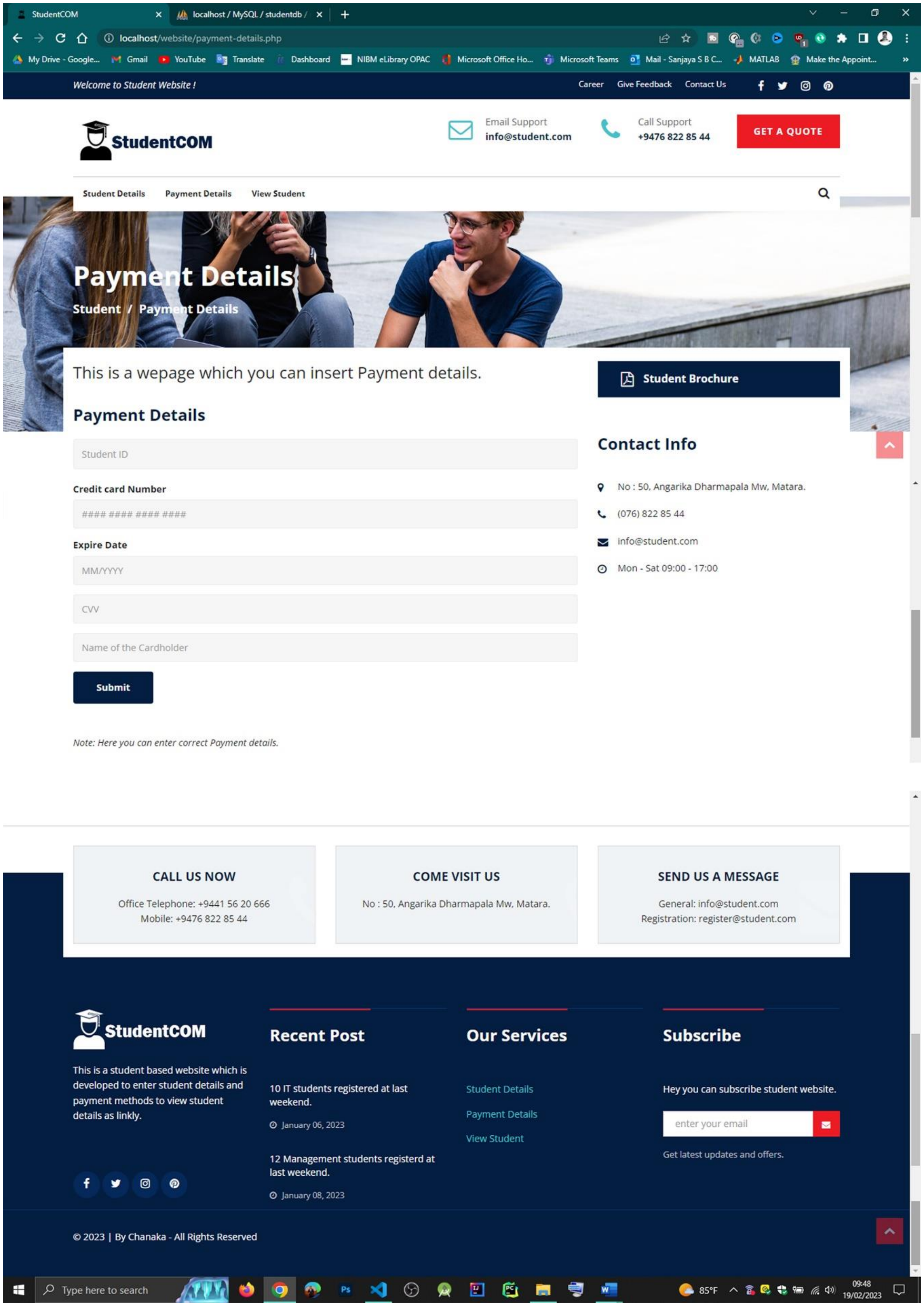
Page 2



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GET A QUOTE

Student Details Payment Details View Student

Payment Details

Student / Payment Details

This is a wepage which you can insert Payment details.

Student Brochure

Payment Details

Student ID

Credit card Number

####

Expire Date

MM/YYYY

CVV

Name of the Cardholder

Submit

Contact Info

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Note: Here you can enter correct Payment details.

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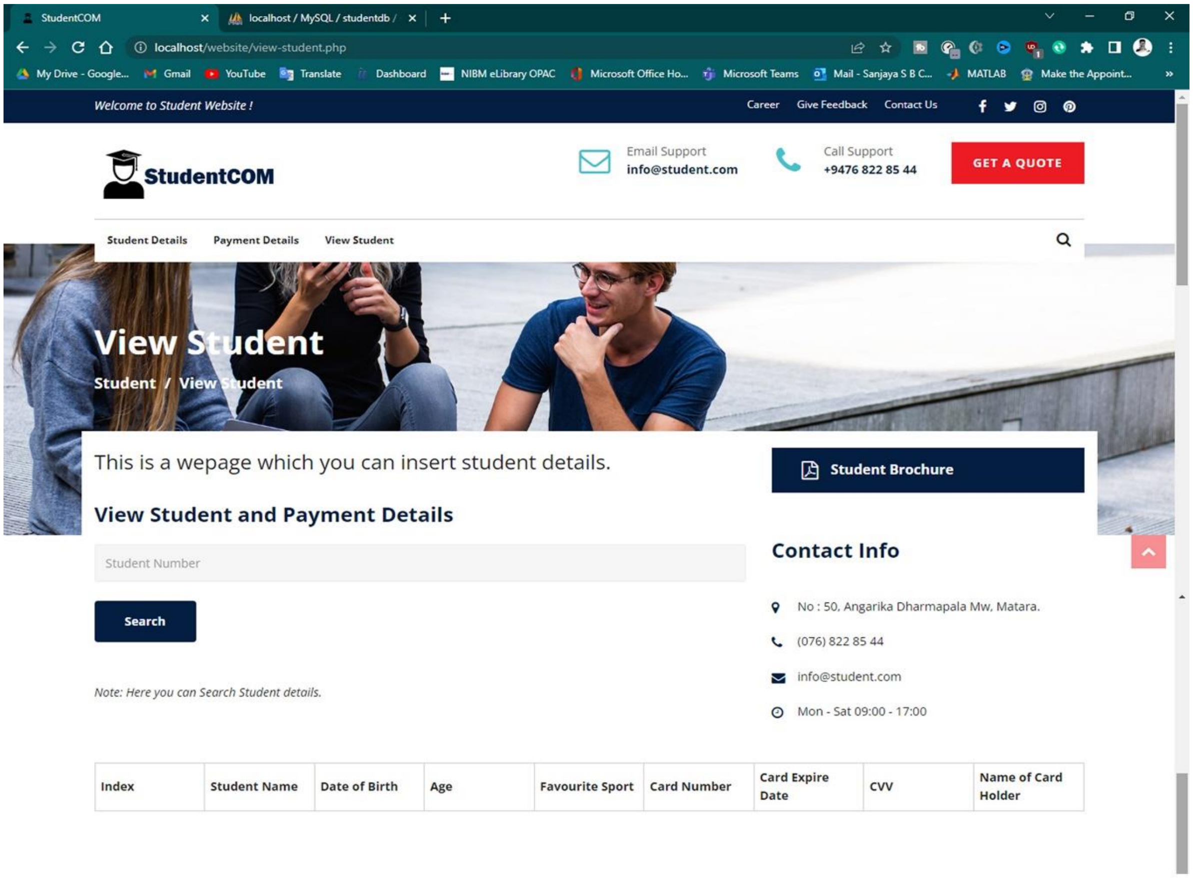
Page 3


StudentCOM
localhost / MySQL / studentdb /
localhost/website/view-student.php
My Drive - Google... Gmail YouTube Translate Dashboard NIBM eLibrary OPAC Microsoft Office Ho... Microsoft Teams Mail - Sanjaya S B C... MATLAB Make the Appoint...

Welcome to Student Website !

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info@student.com

Call Support
+9476 822 85 44

GET A QUOTE

Student Details Payment Details View Student

View Student

Student / View Student

This is a wepage which you can insert student details.

View Student and Payment Details

Student Number

Search

Note: Here you can Search Student details.

Student Brochure

Contact Info

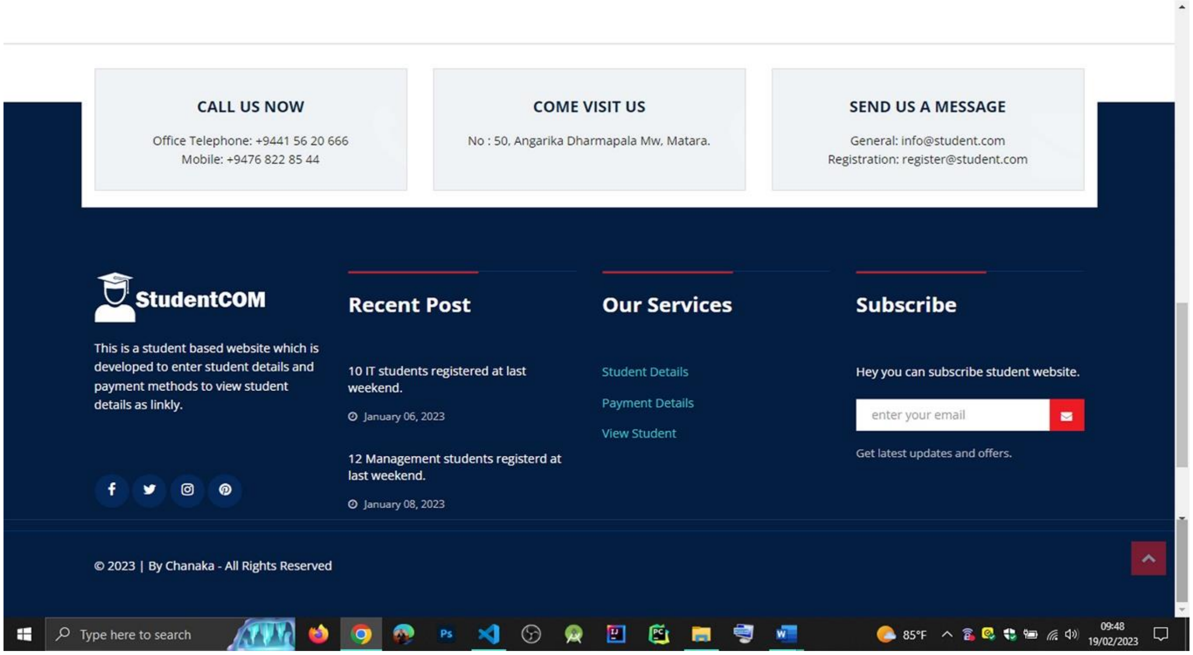
No : 50, Angarika Dharmapala Mw, Matara.

(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder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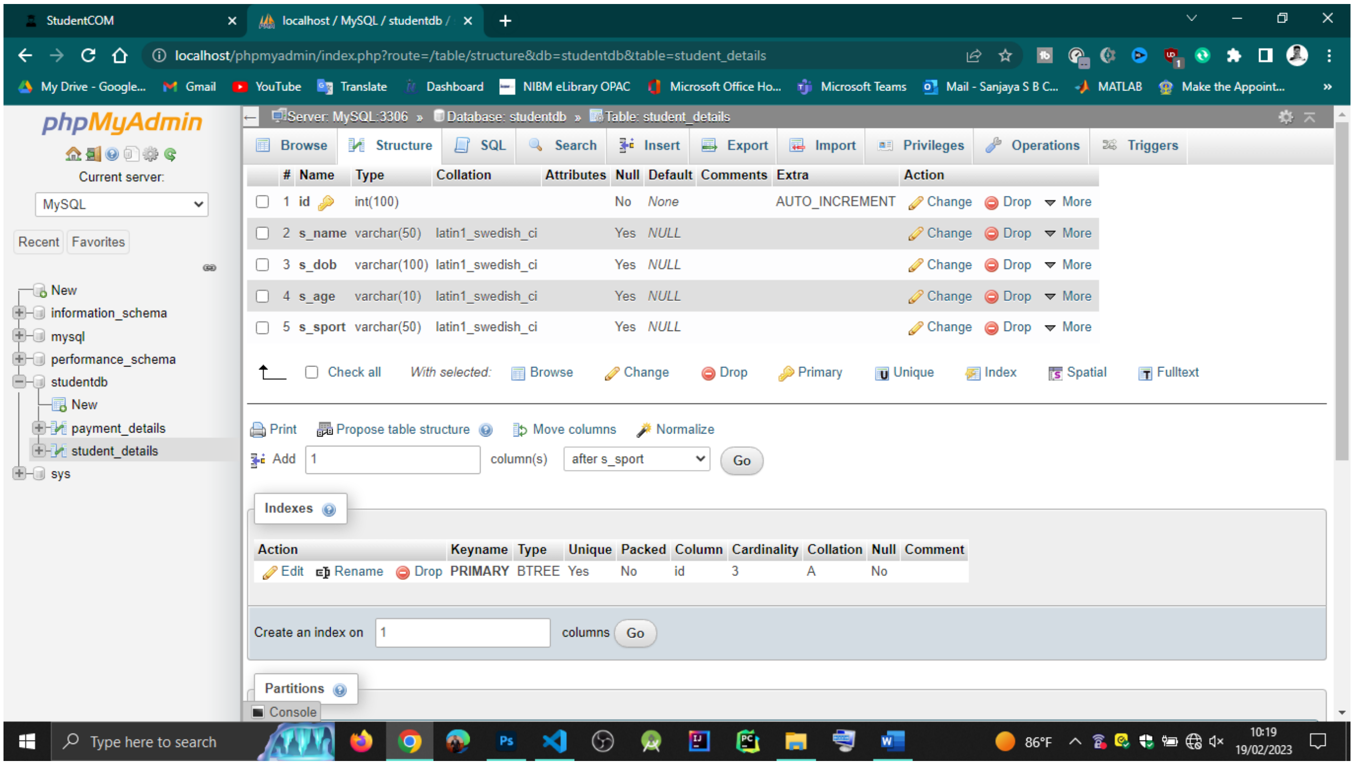
Set up the back-end

To process the form data, I set up a back-end script in a programming language such as PHP. The script should validate the input data, handle errors, and securely store the payment details in a database.

Create the database

I created a database to store the student registration and payment details. I used a database management system such as MySQL in phpMyAdmin.

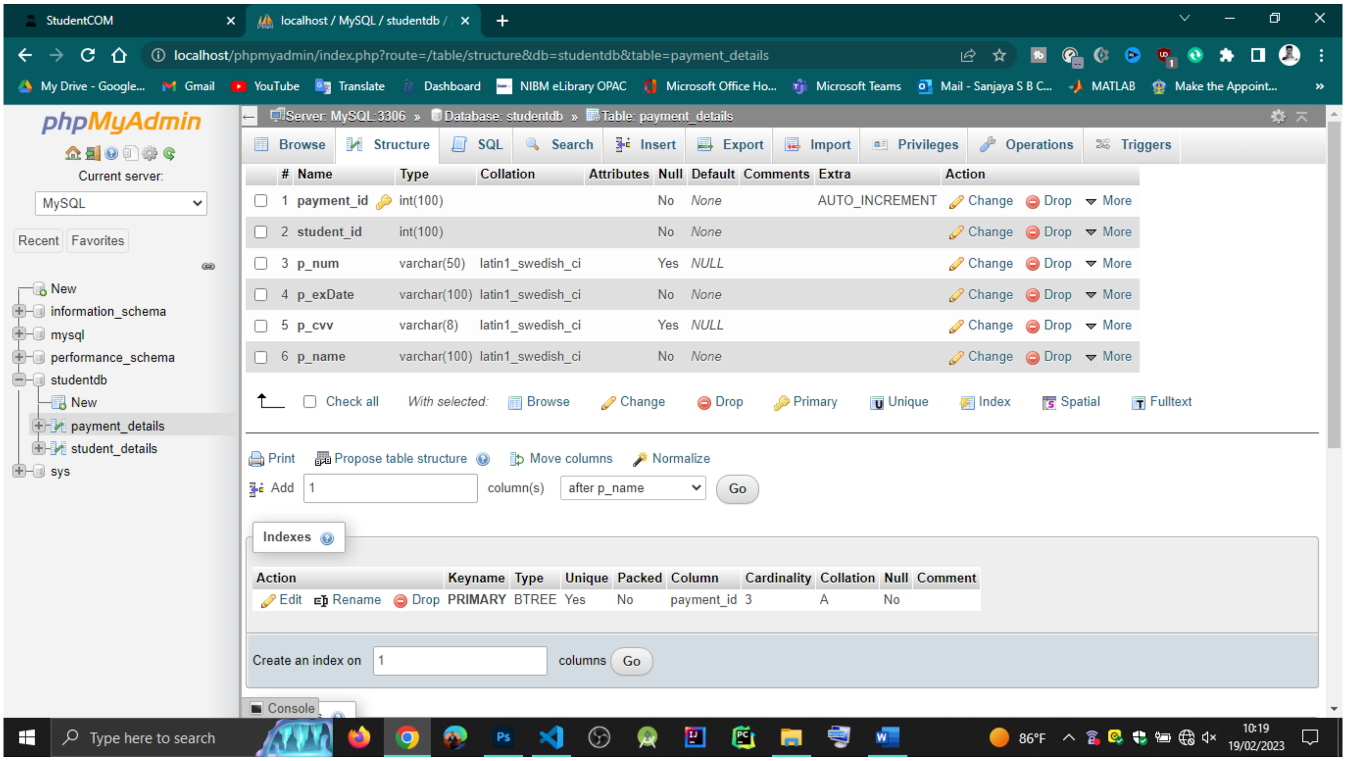


#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(100)			No	None		AUTO_INCREMENT	Change Drop More
2	s_name	varchar(50)	latin1_swedish_ci		Yes	NULL			Change Drop More
3	s_dob	varchar(100)	latin1_swedish_ci		Yes	NULL			Change Drop More
4	s_age	varchar(10)	latin1_swedish_ci		Yes	NULL			Change Drop More
5	s_sport	varchar(50)	latin1_swedish_ci		Yes	NULL			Change Drop More

Add 1 column(s) after s_sport Go

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	id	3	A	No	

Create an index on 1 columns Go


StudentCOM
localhost / MySQL / studentdb /
localhost/phpmyadmin/index.php?route=/table/structure&db=studentdb&table=payment_details
My Drive - Google... Gmail YouTube Translate Dashboard NIBM eLibrary OPAC Microsoft Office Ho... Microsoft Teams Mail - Sanjaya S B C... MATLAB Make the Appoint...
phpMyAdmin
Current server:
MySQL
Recent Favorites
New
information_schema
mysql
performance_schema
studentdb
New
payment_details
student_details
sys
Server: MySQL:3306 » Database: studentdb » Table: payment_details
Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	payment_id	int(100)			No	None		AUTO_INCREMENT	Change Drop More
2	student_id	int(100)			No	None			Change Drop More
3	p_num	varchar(50)	latin1_swedish_ci		Yes	NULL			Change Drop More
4	p_exDate	varchar(100)	latin1_swedish_ci		No	None			Change Drop More
5	p_cvv	varchar(8)	latin1_swedish_ci		Yes	NULL			Change Drop More
6	p_name	varchar(100)	latin1_swedish_ci		No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Spatial Fulltext
Print Propose table structure Move columns Normalize

Add 1 column(s) after p_name Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	payment_id	3	A	No	

Create an index on 1 columns Go

Build the web page

I created these 3 web pages using HTML, CSS, and JavaScript. This web pages include the form I designed and a submit button.

Link the web page to the back-end

I linked the form on the web page to the back-end script that I created. When the user/student submits the form, the data is sent to the back-end script for processing.

Display the registration data

After the user/student submits the form, I can display the registration data on a separate page. This page should show the user's details along with the payment details they entered on a table.

Secure the system

It's important to ensure the security of the system by using encryption for sensitive data and implementing other security measures such as input validation and server-side validation.

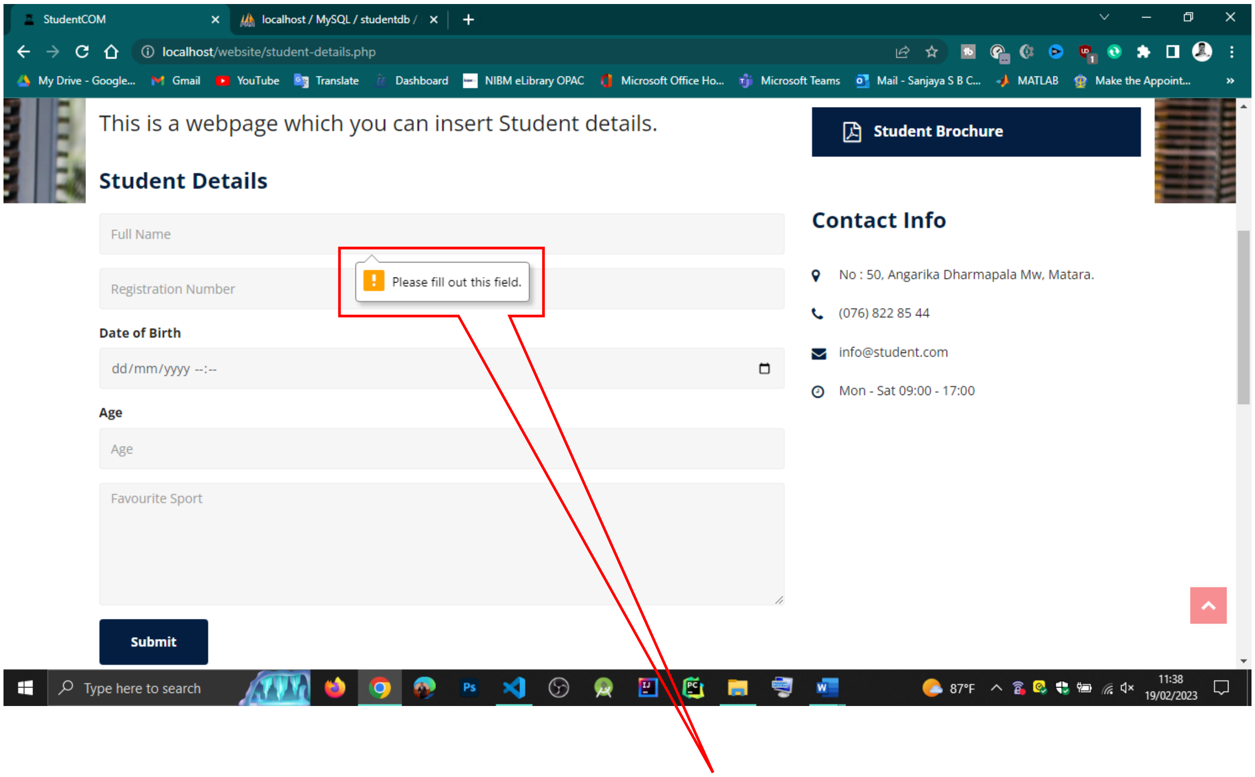
Security controls you have implemented on Page 1

Here, I enter some security controls to implement this web page.

Input validation: Check and validate all user input on the web form to ensure that it meets expected criteria (such as data type, length, and format), and discard any input that fails the validation.

```
input type="text"
```

```
required=""
```



This is a webpage which you can insert Student details.

Student Details

Full Name

Registration Number

Please fill out this field.

Date of Birth

dd/mm/yyyy --:--

Age

Age

Favourite Sport

Submit

Student Brochure

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

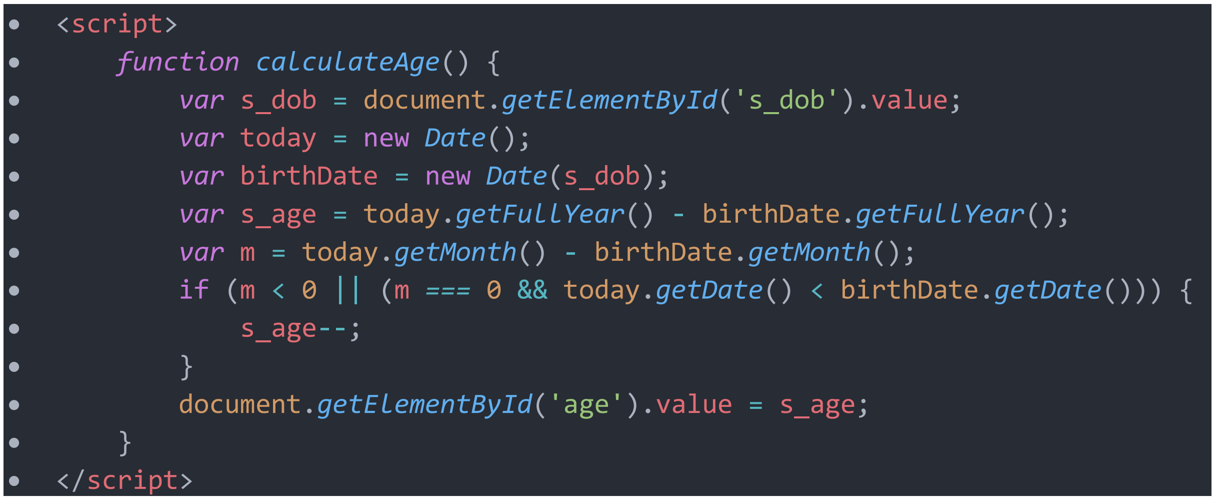
(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

When submit button clicked
without entering any value to the text area,
the Required Alert message display.

- Use “Text” input type to the **Full Name** entering text area and it is required field.
- Use “Number” input type to the **Registration Number** entering text area and it is required field. It cannot type other characters and symbols.
- Use “date” input type to the **Date of Birth** entering text area and it is required field. I use onchange="ageCount()" fuction to this input. We can pick the date of birth by this.
- Use “Number” input type to the **Age** entering text area and it is required field. It cannot type other characters and symbols. This is also an auto pickable textarea. When we pick the birthday, the Age will auto pick.



```
<script>
    function calculateAge() {
        var s_dob = document.getElementById('s_dob').value;
        var today = new Date();
        var birthDate = new Date(s_dob);
        var s_age = today.getFullYear() - birthDate.getFullYear();
        var m = today.getMonth() - birthDate.getMonth();
        if (m < 0 || (m === 0 && today.getDate() < birthDate.getDate())) {
            s_age--;
        }
        document.getElementById('age').value = s_age;
    }
</script>
```

- Use “textarea” to this field and use rows="6" to this implementation when entering **Favorite Sport**.
- Use button type “Submit” to submit the entered details of the form. Here I use style="pointer-events: all; cursor: pointer;" to the button hovering event.

Security controls you have implemented on Page 2

Here, I enter some security controls to implement this web page. When implementing a payment details entering web form, it's important to validate user input to ensure that the data entered is correct and meets certain criteria. Here are some basic guidelines for implementing payment form validation:

Required fields: Make sure to clearly mark which fields are required, such as the credit card number, expiration date, and security code. You can do this by using an asterisk (*) or bold font to indicate required fields.

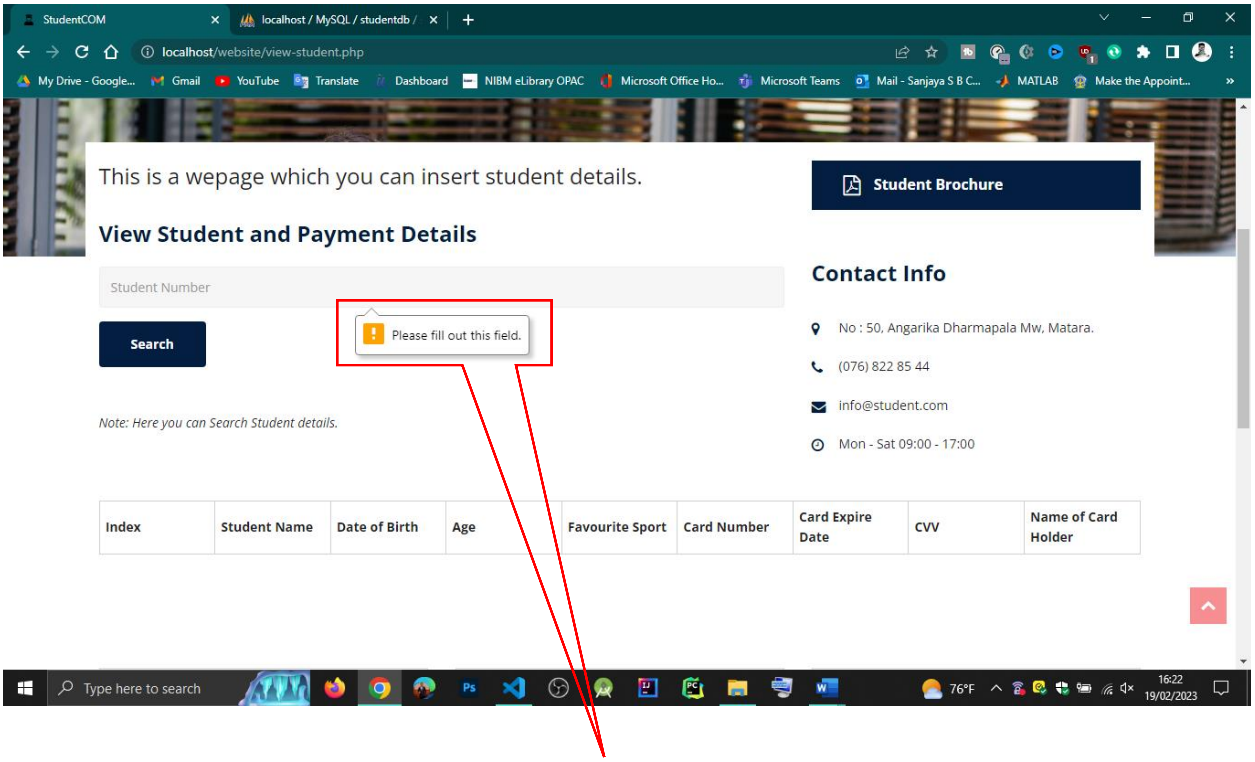
Input restrictions: Use input masks or validation rules to restrict input to the correct format. For example, you can restrict the credit card number field to only allow numeric input and limit the number of digits to 16. Similarly, you can restrict the expiration date field to only accept the format MM/YYYY.

Error messages: Provide clear error messages if a user enters incorrect data, such as an invalid credit card number or an expired card. Use inline validation to indicate errors as the user is typing, rather than waiting until the form is submitted.

- Use “Text” input type to the **Student Id** entering text area and it is required field.
- Use “Text” input type to the **Credit Card Number** entering text area and it is required field. It contains maxlength="16" number of characters. Because the Credit Card Number consists of 16 characters.
- Use “Text” input type to the **Expire Date** entering text area and it is required field. It contains maxlength="6" number of characters. Because the Expire Date consists of 6 characters as MM/YYYY.
- Use “Text” input type to the **CVV** entering text area and it is required field. It contains maxlength="3" number of characters. Because the CVV consists of 3 characters.
- Use “Text” input type to the **Name of the Cardholder** entering text area and it is required field.

The technology used to develop the third feature on page 3

- Use “Text” input type to the **Student ID** entering text area and it is required field.
- Use button type “Submit” to submit the entered details of the form. Here I use style="pointer-events: all; cursor: pointer;" to the button hovering event.



This is a wepage which you can insert student details.

View Student and Payment Details

Student Number

Please fill out this field.

Note: Here you can Search Student details.

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder

Required field when click submit button without entering value.

There are many different technologies that can be used to develop a web page table that displays student details and payment details. Here are some commonly used technologies:

HTML, CSS, JavaScript, jQuery, PHP, MySQL, Bootstrap

```
const starRegex = /\w/g;
const replacement = "★";

const test = document.getElementById("crd_no")
console.log(test.textContent)
test.innerHTML = test.textContent.replace(starRegex, replacement)
```

It seems like you have written some code that replaces all word characters in the text content of an HTML element with a star symbol. Here's a breakdown of what's happening in the code:

- The regular expression /**w/g** matches all word characters (letters, numbers, and underscores) in the text content.
- The string **"★"** is used as the replacement value, which will replace each matched word character with a star symbol.
- The **document.getElementById("crd_no")** method retrieves the HTML element with the id attribute value of **"crd_no"**. This assumes that there is an HTML element with an id attribute value of **"crd_no"** in the HTML document.
- The **textContent** property of the HTML element is accessed to retrieve the text content of the element.
- The **replace()** method is called on the text content, passing in the **starRegex** regular expression and **replacement** string as arguments. This replaces all word characters in the text content with a star symbol.
- The **innerHTML** property of the HTML element is then set to the modified text content, effectively replacing the original text with the new text that has stars replacing all word characters.

Note that this code assumes that the HTML element with **id** attribute value of **"crd_no"** contains text that needs to be replaced with stars. If the element contains other HTML elements, such as child elements, the **textContent** property may not capture all the text that needs to be replaced. In that case, you might need to use other methods to retrieve the text content, such as the **innerText** property or a combination of **childNodes** and **nodeValue** properties.

Encrypting a credit or debit card number by replacing some or all of the digits with asterisks or other characters can be an effective way to protect the sensitive information from being exposed to unauthorized individuals.

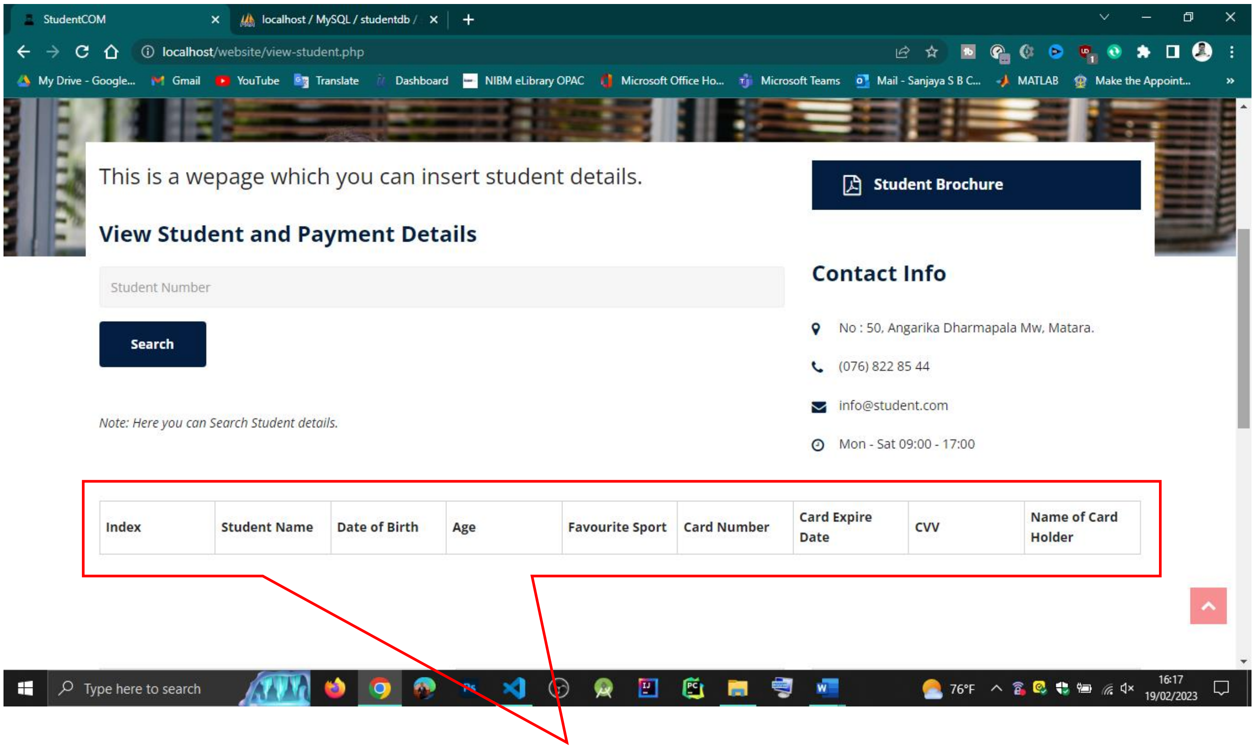
For example, instead of displaying the full card number, the number can be masked in a way that only a few digits are visible. This can be achieved by replacing all but the last four digits of the card number with asterisks or other symbols. So, for a card number like 1234 5678 9012 3456, it might be displayed as **** **** **** 3456.

This approach is commonly used by online merchants, banks, and other organizations that handle sensitive payment information. By masking the card number in this way, even if an unauthorized person gains access to the data, they will not be able to see the full card number and use it for fraudulent purposes.

However, it's important to note that masking the card number with asterisks does not provide full encryption, as the original data is still stored in an unencrypted form in some systems. In addition, masking the card number does not provide protection against other types of attacks, such as phishing or malware, which can still compromise the security of the payment data.

Therefore, it's important to implement additional security measures such as encryption, access controls, and monitoring to protect payment information and prevent data breaches.

Here, I enter student's student id and search. Then the details of the student and payment details display on the table as follows.



This is a wepage which you can insert student details.

View Student and Payment Details

Student Number

Search

Note: Here you can Search Student details.

Student Brochure

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

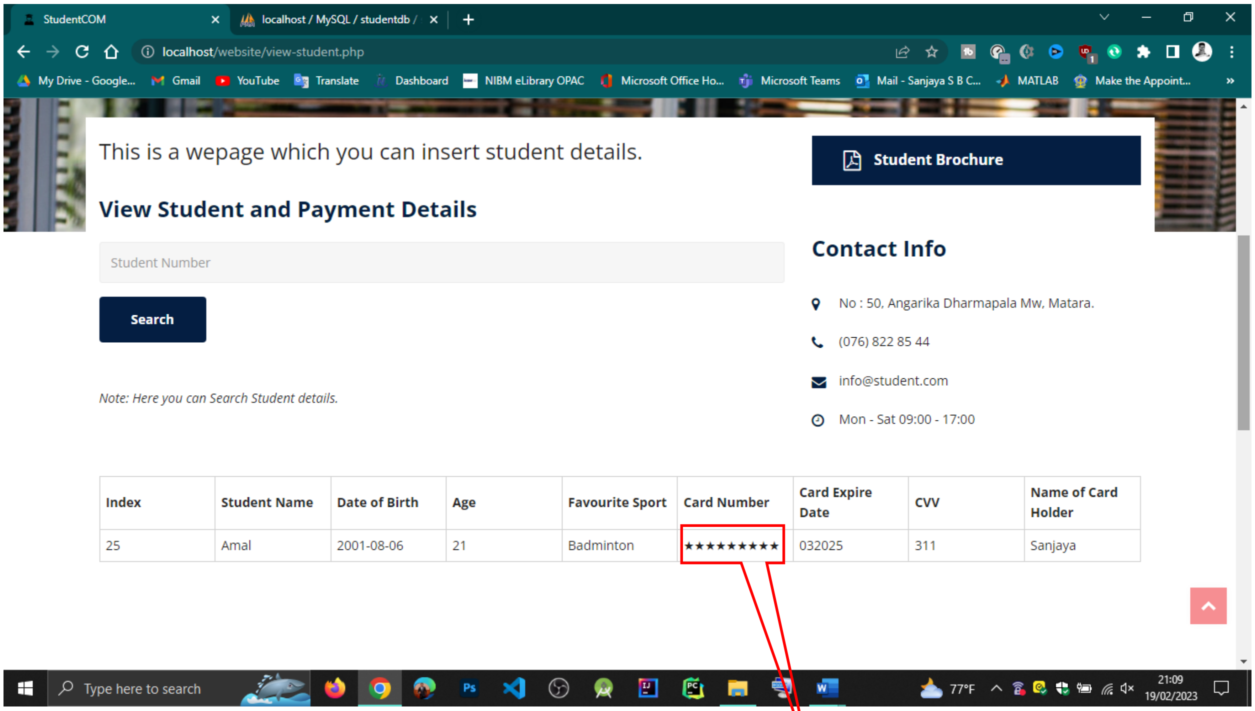
(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder

Student details and Payment details displaying table



This is a wepage which you can insert student details.

View Student and Payment Details

Note: Here you can Search Student details.

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Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder
25	Amal	2001-08-06	21	Badminton	*********	032025	311	Sanjaya

Encrypted Card Details

Recommendations to reduce the risk of displaying credit card numbers

Here are some recommendations to reduce the risk of displaying credit card numbers:

Avoid storing credit card numbers: If you don't store credit card numbers, there's no risk of accidentally displaying them. Use a payment processor or payment gateway that is PCI-DSS compliant to store and process credit card information.

Secure your website: Use secure website protocols such as HTTPS and implement security measures such as firewalls and intrusion detection systems to protect against hacking attempts.

Use masked input fields: When collecting credit card information, use masked input fields that only display the last four digits of the credit card number. This will help to prevent accidental display of the full credit card number.

Encrypt data transmissions: When transmitting credit card information over the internet, use encryption technologies such as SSL or TLS to protect the information from interception.

Train your employees: Educate your employees about the importance of safeguarding sensitive information, including credit card numbers. Train them on how to handle and store credit card information properly to minimize the risk of accidental display.

Regularly monitor your systems: Regularly monitor your systems and logs for unusual activity or signs of a security breach. This can help you identify and respond to potential security incidents before they become major issues.

By implementing these recommendations, you can reduce the risk of displaying credit card numbers and protect your customers' sensitive information.

Set the web application to run on a local domain name you prefer

To set up a local domain name for a web application, you can follow these general steps:

Open the hosts file on my computer. On Windows, the file is located at C:\Windows\System32\drivers\etc\hosts, while on Mac or Linux, it is located at /etc/hosts.

Add a new entry to the hosts file in the following format: 127.0.0.1 yourdomain.local, where "yourdomain" is the name you want to use for your local domain name.

Save the hosts file.

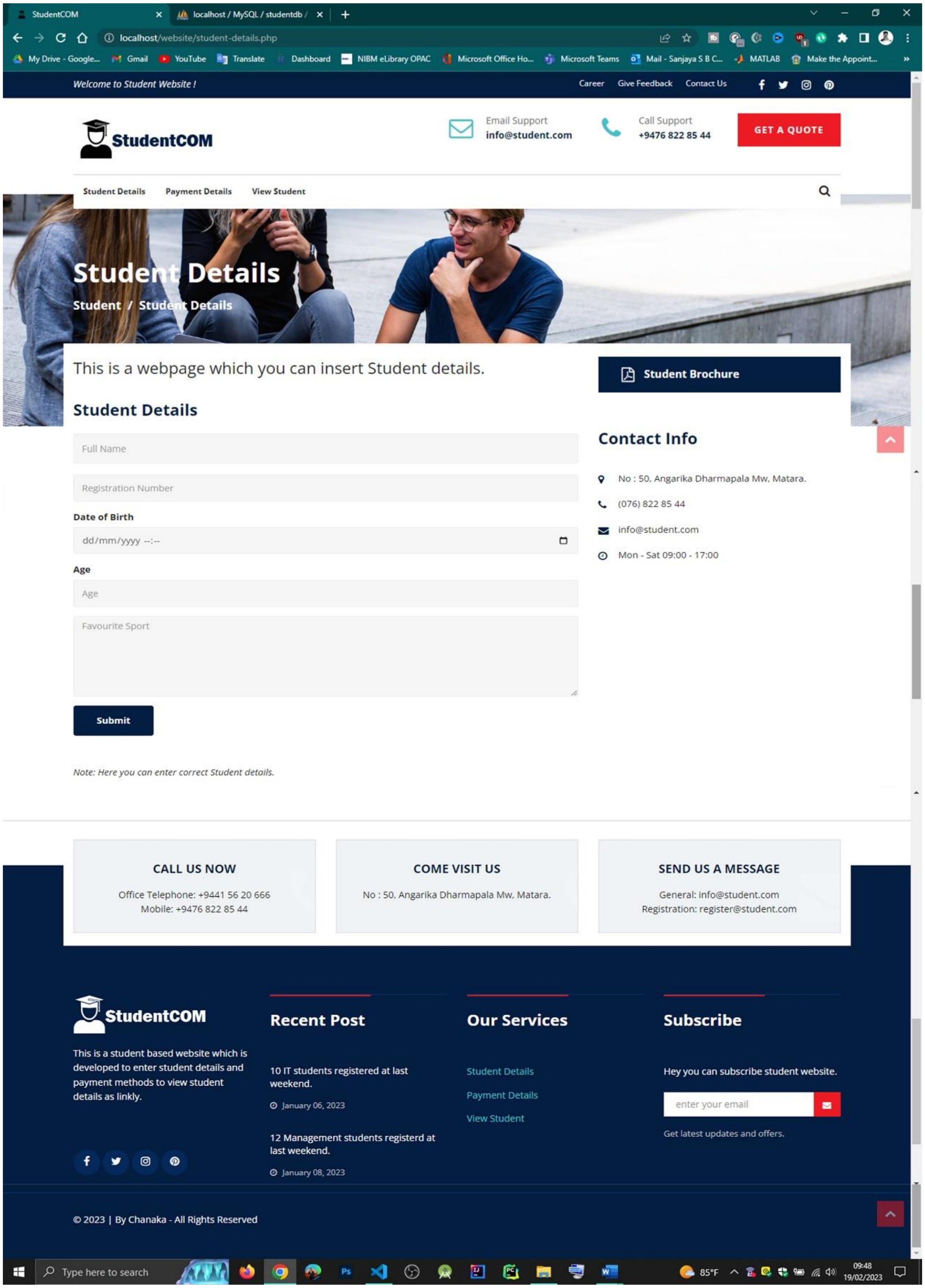
Configure your web server to recognize the new local domain name. The exact steps for doing this may vary depending on your web server, but you typically need to create a new virtual host entry that maps the local domain name to the root directory of your web application.

Restart your web server, so it can recognize the new local domain name and virtual host entry.

Access your web application using the new local domain name you just set, for example: http://yourdomain.local.

Screenshots of your web application

Page 1 - I use **http://localhost/website/student-details.php**



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GET A QUOTE

Student Details Payment Details View Student

Student Details

Student / Student Details

This is a webpage which you can insert Student details.

Student Details

Full Name

Registration Number

Date of Birth

dd/mm/yyyy --:--

Age

Age

Favourite Sport

Submit

Note: Here you can enter correct Student details.

Student Brochure

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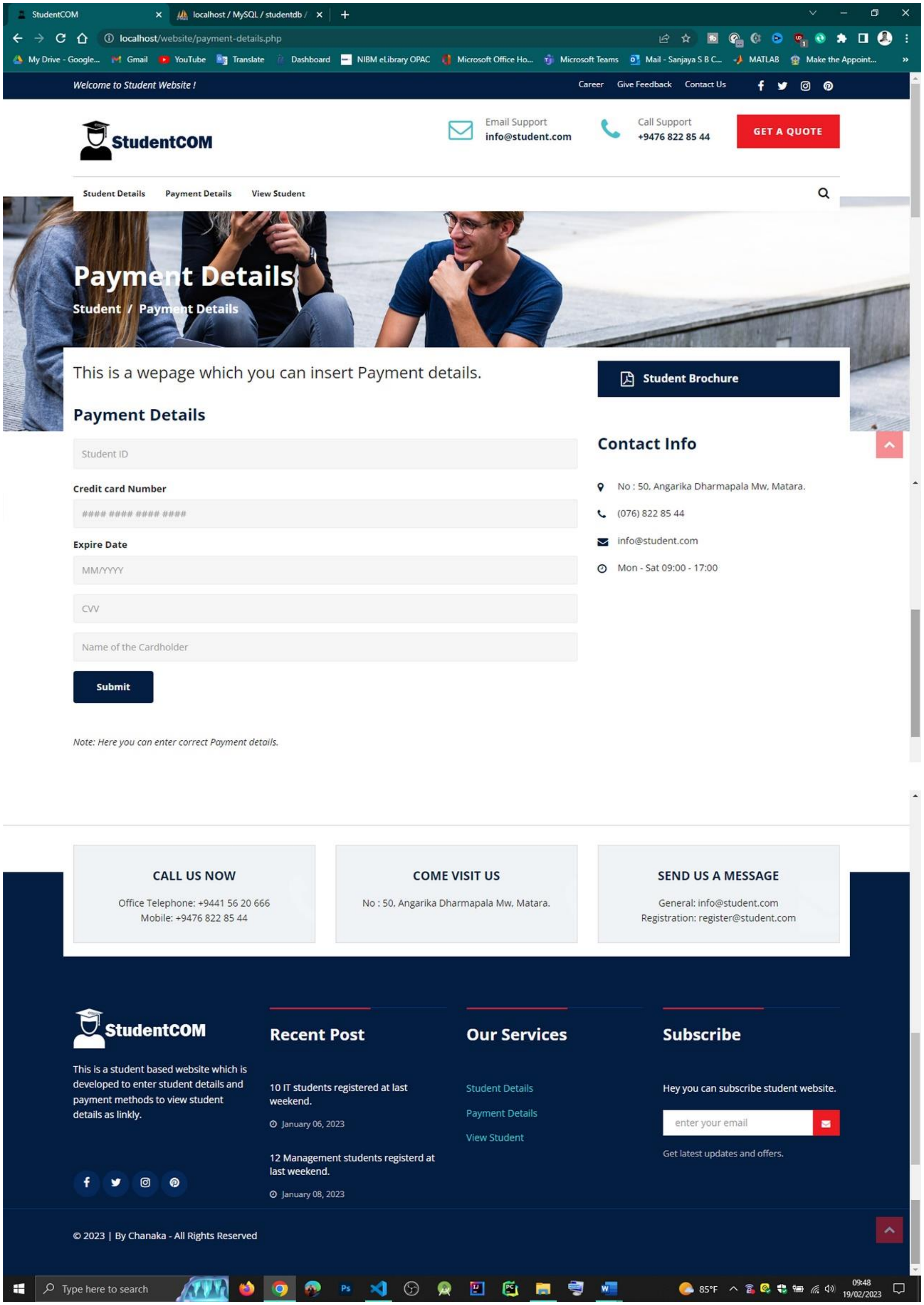
Page 2 - I use **http://localhost/website/payment-details.php**



Payment Details

Student / Payment Details

This is a wepage which you can insert Payment details.

Payment Details

Student ID

Credit card Number

####

Expire Date

MM/YYYY

CVV

Name of the Cardholder

Note: Here you can enter correct Payment details.

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

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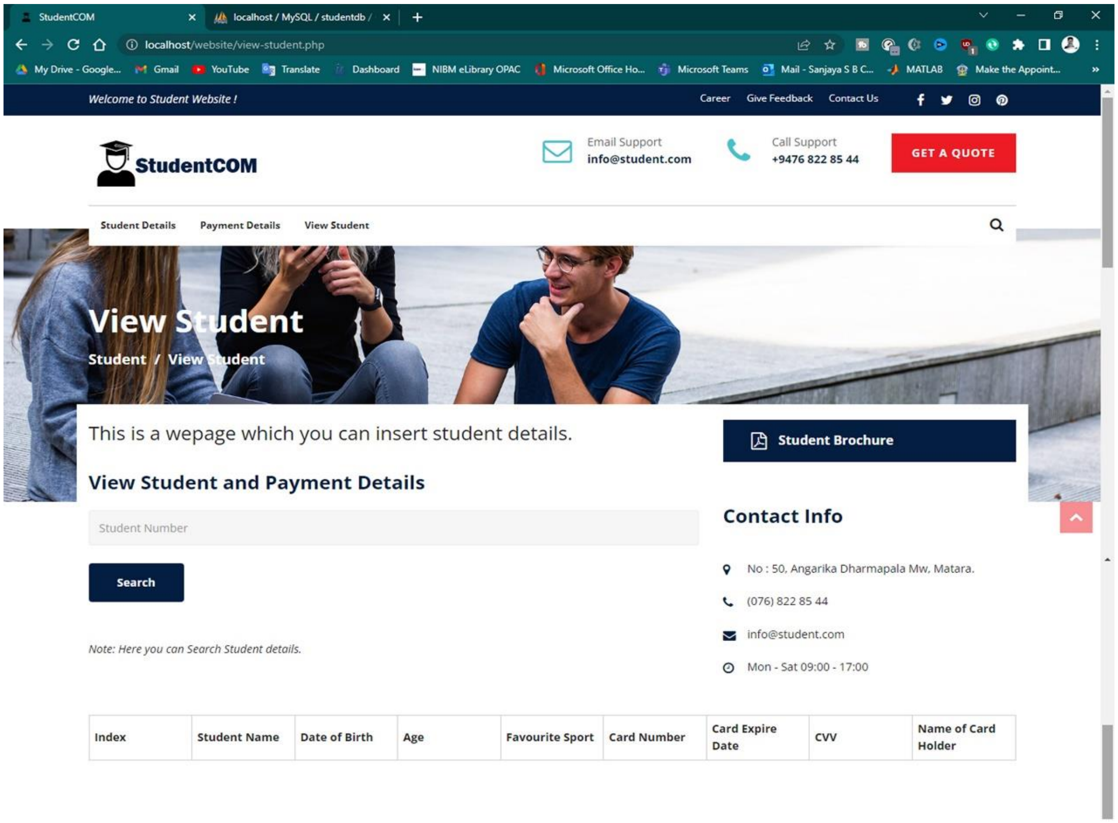
Page 3 - I use **http://localhost/website/view-student.php**



StudentCOM
localhost / MySQL / studentdb /
localhost/website/view-student.php
My Drive - Google... Gmail YouTube Translate Dashboard NIBM eLibrary OPAC Microsoft Office Ho... Microsoft Teams Mail - Sanjaya S B C... MATLAB Make the Appoint...

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Call Support
+9476 822 85 44

GET A QUOTE

Student Details Payment Details View Student

View Student

Student / View Student

This is a wepage which you can insert student details.

View Student and Payment Details

Student Number

Search

Note: Here you can Search Student details.

Student Brochure

Contact Info

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(076) 822 85 44

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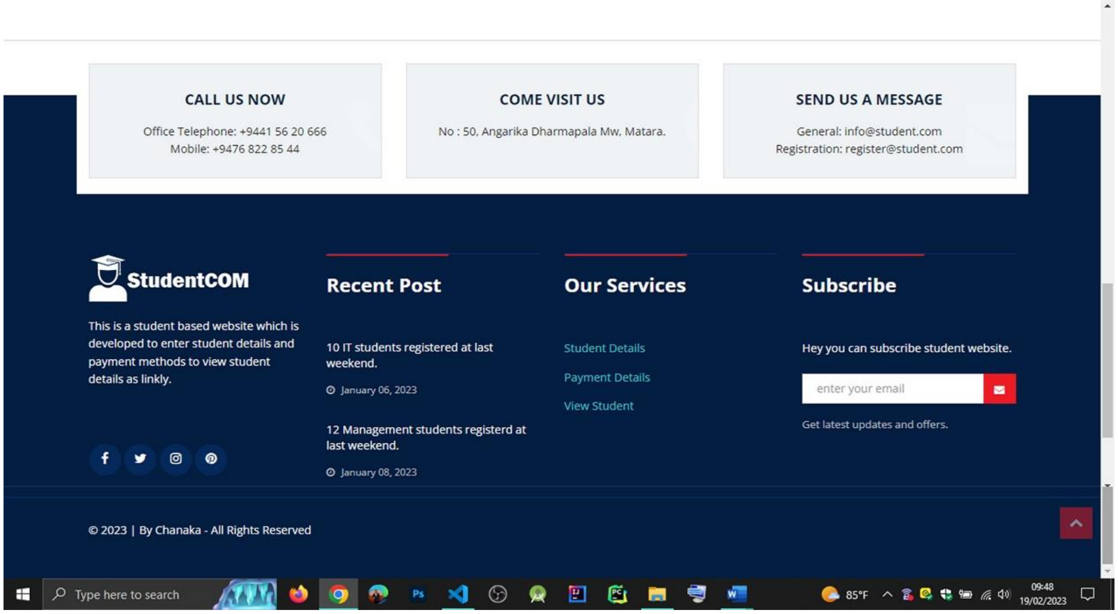
Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder



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COME VISIT US

No : 50, Angarika Dharmapala Mw, Matara.

SEND US A MESSAGE

General: info@student.com
Registration: register@student.com

StudentCOM

This is a student based website which is developed to enter student details and payment methods to view student details as linkly.

Recent Post

10 IT students registered at last weekend.

January 06, 2023

12 Management students registerd at last weekend.

January 08, 2023

Our Services

Student Details

Payment Details

View Student

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Hey you can subscribe student website.

enter your email

Get latest updates and offers.

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Database Design

I here I use phpMyAdmin and select root path to create database as follows.

In here I created a database called "**studentdb**".

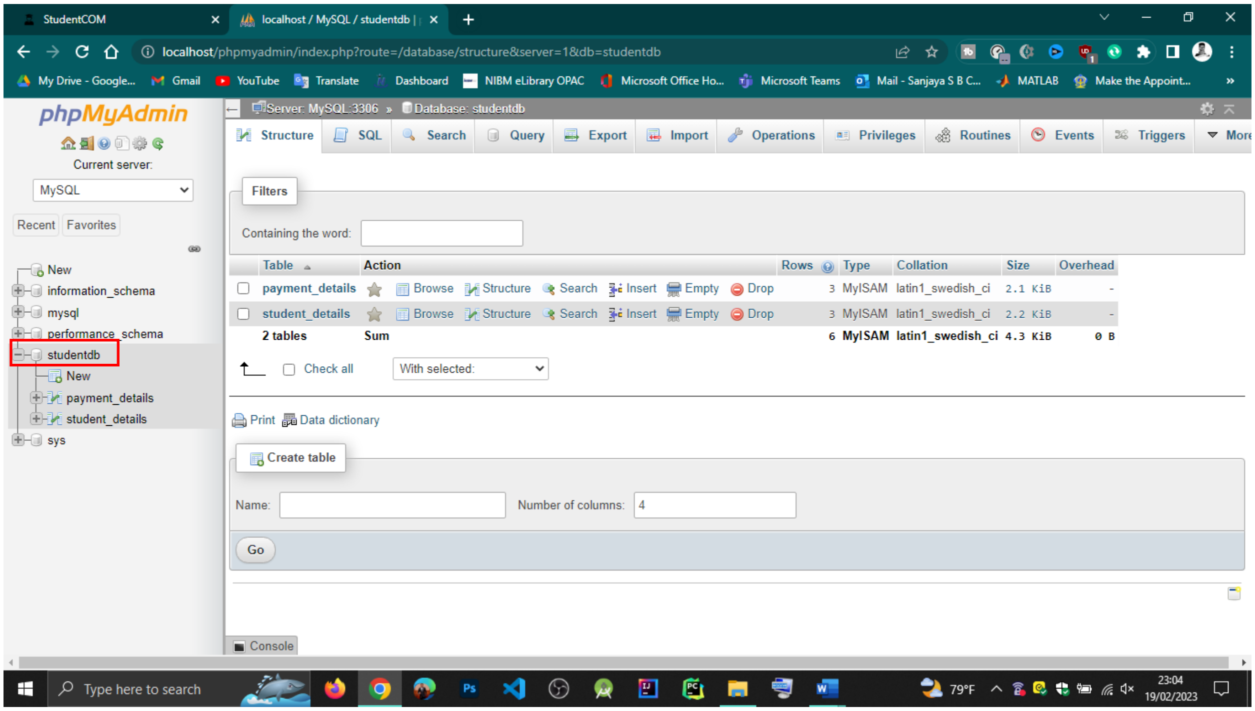

StudentCOM
localhost / MySQL / studentdb
localhost/phpmyadmin/index.php?route=/database/structure&server=1&db=studentdb
My Drive - Google... Gmail YouTube Translate Dashboard NIBM eLibrary OPAC Microsoft Office Ho... Microsoft Teams Mail - Sanjaya S B C... MATLAB Make the Appoint...
phpMyAdmin
Current server:
MySQL
Recent Favorites
New
information_schema
mysql
performance_schema
studentdb
New
payment_details
student_details
sys
Server: MySQL:3306 » Database: studentdb
Structure SQL Search Query Export Import Operations Privileges Routines Events Triggers More
Filters
Containing the word:
Check all
With selected:
Print Data dictionary
Create table
Name:
Number of columns: 4
Go
Console
Type here to search
79°F
23:04
19/02/2023

Table	Action	Rows	Type	Collation	Size	Overhead
payment_details	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.1 KiB	-
student_details	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.2 KiB	-
2 tables	Sum	6	MyISAM	latin1_swedish_ci	4.3 KiB	0 B

Then I created two tables called "**student_details**" and "**payment_details**".

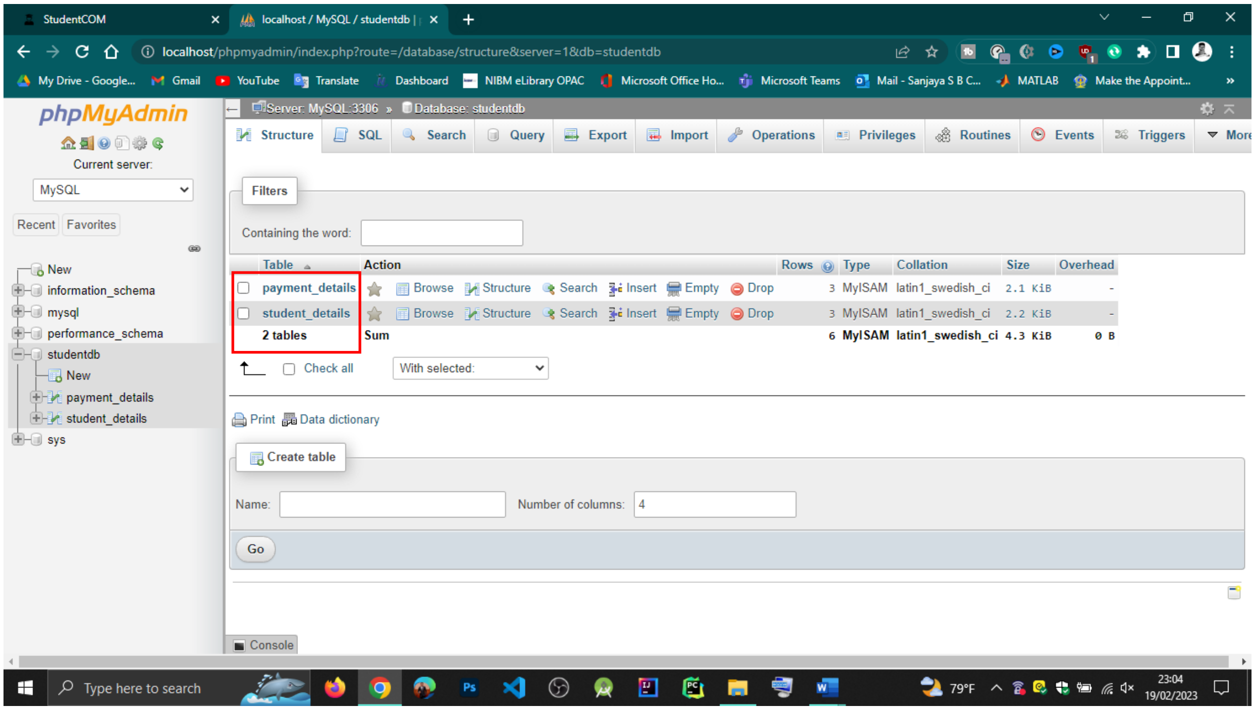
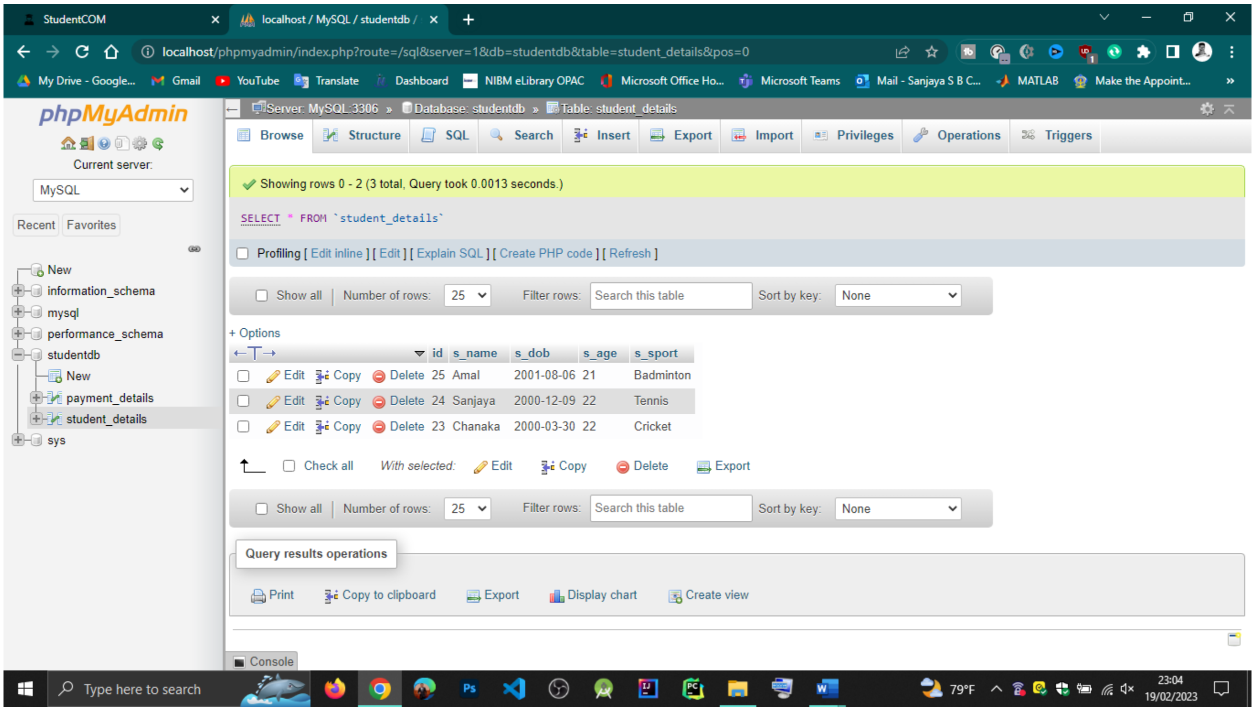


Table	Action	Rows	Type	Collation	Size	Overhead
payment_details	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.1 KiB	-
student_details	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.2 KiB	-
2 tables	Sum	6	MyISAM	latin1_swedish_ci	4.3 KiB	0 B

Student Details information.

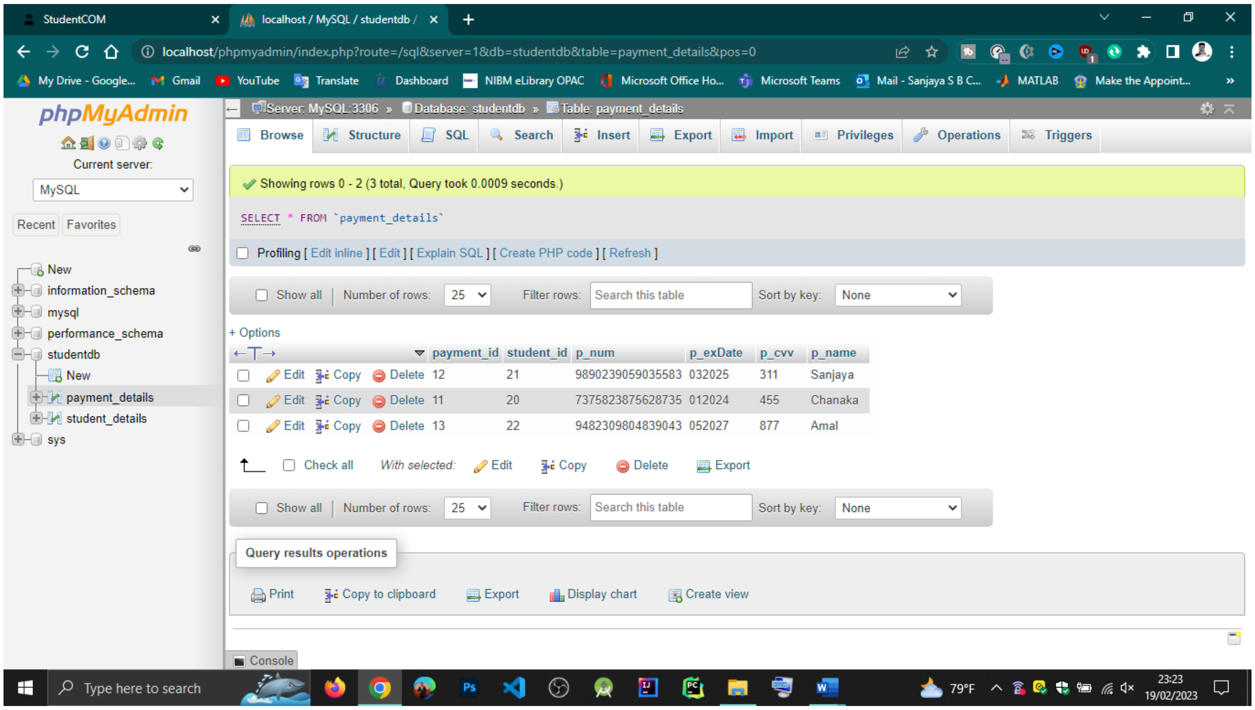


Showing rows 0 - 2 (3 total, Query took 0.0013 seconds.)

```
SELECT * FROM `student_details`
```

id	s_name	s_dob	s_age	s_sport
25	Amal	2001-08-06	21	Badminton
24	Sanjaya	2000-12-09	22	Tennis
23	Chanaka	2000-03-30	22	Cricket

Payment Details information

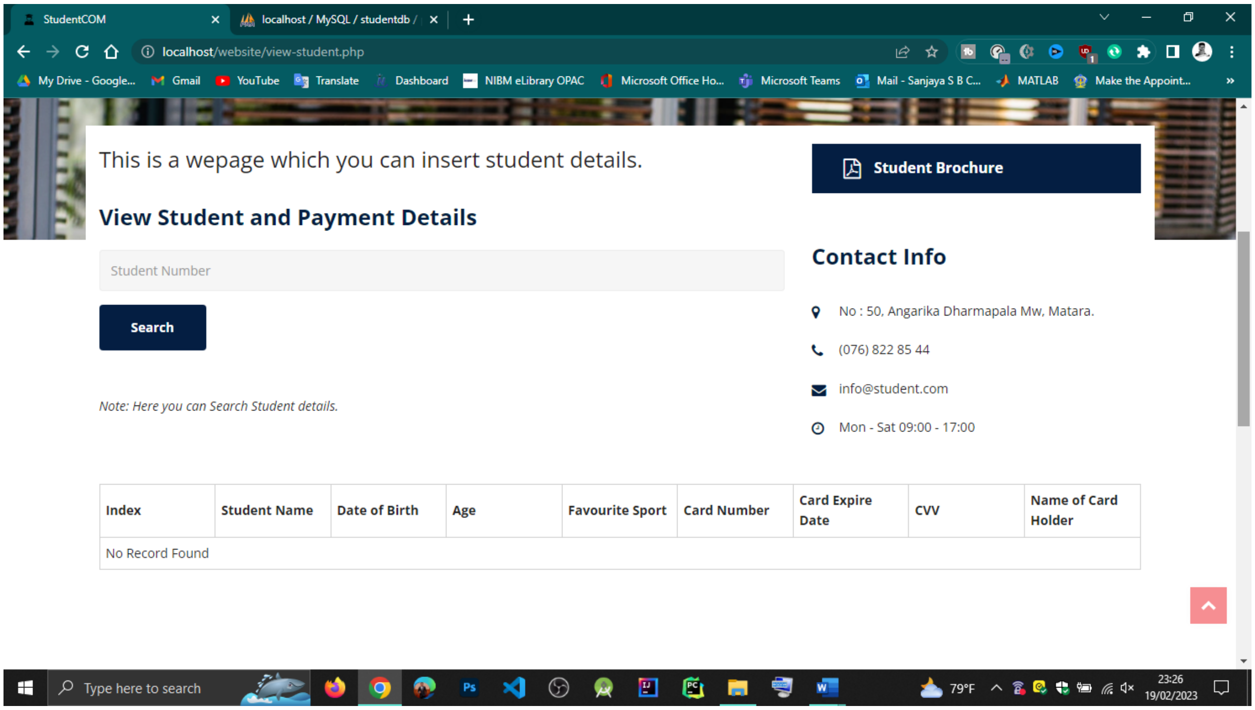


Showing rows 0 - 2 (3 total, Query took 0.0009 seconds.)

```
SELECT * FROM `payment_details`
```

payment_id	student_id	p_num	p_exDate	p_cvv	p_name
12	21	9890239059035583	032025	311	Sanjaya
11	20	7375823875628735	012024	455	Chanaka
13	22	9482309804839043	052027	877	Amal

When your ID is not matching,



This is a wepage which you can insert student details.

View Student and Payment Details

Student Number

Note: Here you can Search Student details.

Contact Info

No : 50, Angarika Dharmapala Mw, Matara.

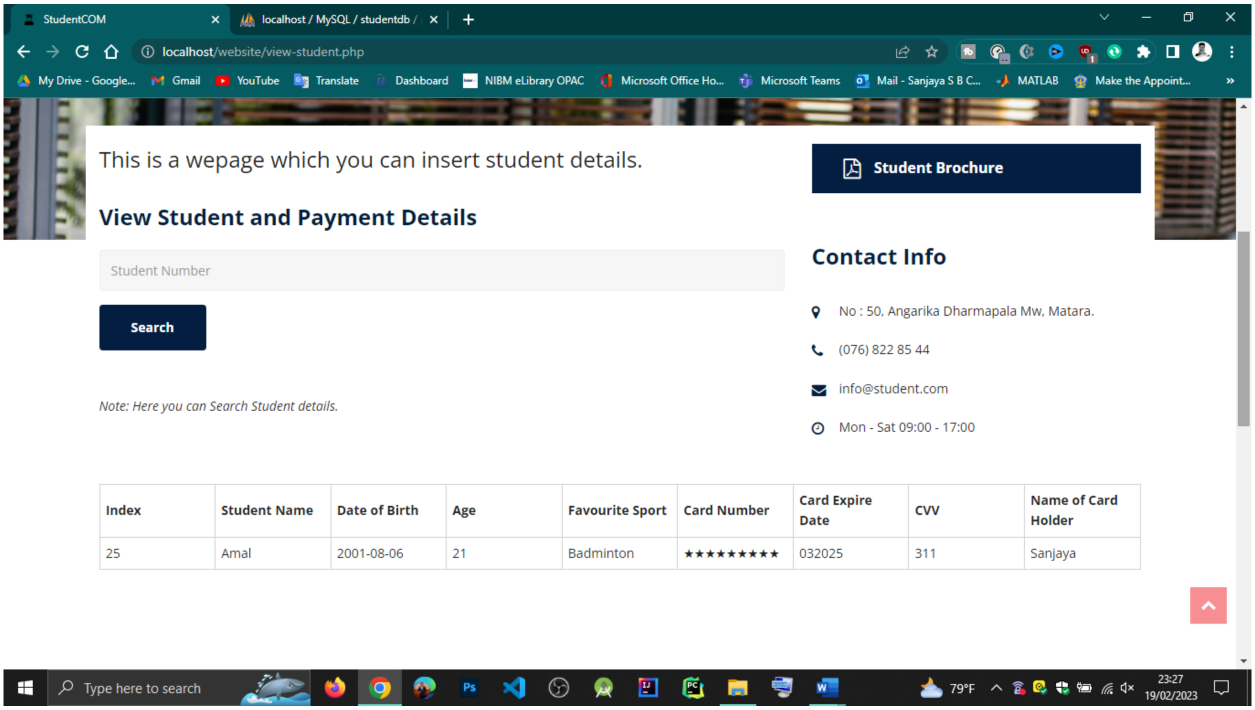
(076) 822 85 44

info@student.com

Mon - Sat 09:00 - 17:00

Index	Student Name	Date of Birth	Age	Favourite Sport	Card Number	Card Expire Date	CVV	Name of Card Holder
No Record Found								

When entering real ID.



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25	Amal	2001-08-06	21	Badminton	★★★★★★★★★	032025	311	Sanjaya

Your suggestions to maintain RPO (Recovery Point Objectives) and RTO (Recovery Time Objectives)

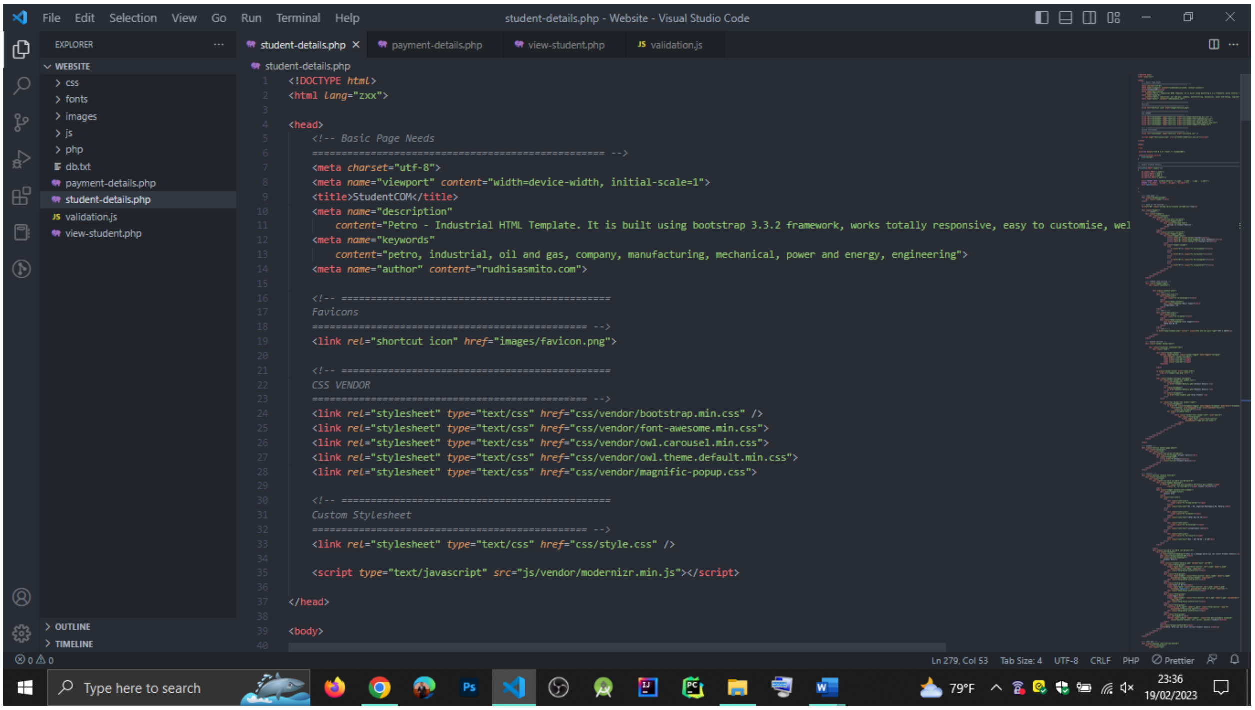
Maintaining Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO) is crucial to ensure business continuity and disaster recovery. Here are some suggestions to help maintain RPO and RTO:

- Regularly back up your data: To maintain RPO, you need to ensure that your data is backed up regularly to a secure location, such as a cloud-based storage system or an offsite backup server. The frequency of backups should be determined based on the criticality of the data and the acceptable data loss in the event of a disaster.
- Test your backup and recovery process: To maintain RTO, it's important to regularly test your backup and recovery process to ensure that it works as expected. This will help you identify any potential issues or bottlenecks and make any necessary changes to ensure a faster recovery time.
- Use redundant systems and infrastructure: To maintain both RPO and RTO, you can use redundant systems and infrastructure, such as redundant power supplies, network connections, and storage systems. This will help ensure that your systems are always available, even in the event of a failure.
- Monitor your systems and infrastructure: To maintain RTO, you need to proactively monitor your systems and infrastructure to identify any potential issues before they become a problem. This will help you take action quickly and minimize downtime.
- Develop and maintain a disaster recovery plan: To maintain both RPO and RTO, you should have a disaster recovery plan in place that outlines the steps to take in the event of a disaster. The plan should include information on who is responsible for what, how to communicate with stakeholders, and the steps to take to restore systems and data.

By following these suggestions, you can help maintain RPO and RTO, which will help ensure business continuity and minimize the impact of a disaster on your business.

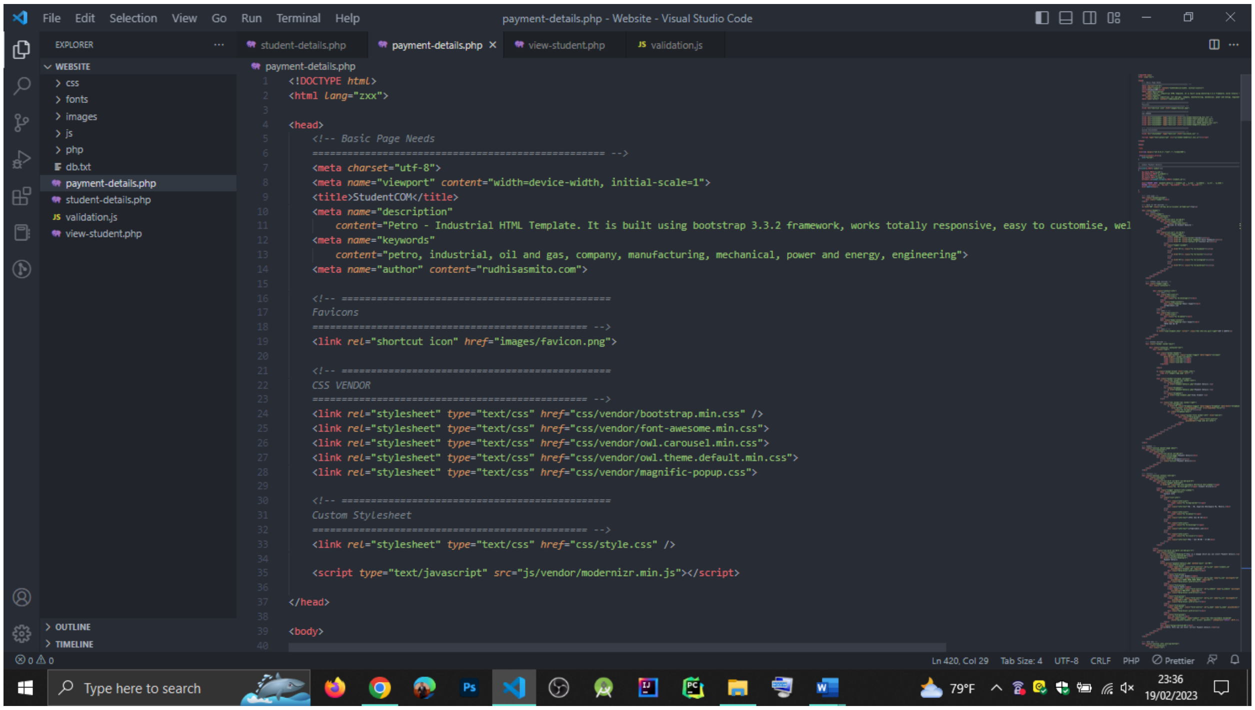
Coding

Student Details page



```
<!DOCTYPE html>
<html lang="zxx">

<head>
    <!-- Basic Page Needs
    ================================================== -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>StudentCOM</title>
    <meta name="description"
        content="Petro - Industrial HTML Template. It is built using bootstrap 3.3.2 framework, works totally responsive, easy to customise, wel
    <meta name="keywords"
        content="petro, industrial, oil and gas, company, manufacturing, mechanical, power and energy, engineering">
    <meta name="author" content="rudhisasmito.com">

    <!-- ==============================================
    Favicons
    ================================================= -->
    <link rel="shortcut icon" href="images/favicon.png">

    <!-- ==============================================
    CSS VENDOR
    ================================================= -->
    <link rel="stylesheet" type="text/css" href="css/vendor/bootstrap.min.css" />
    <link rel="stylesheet" type="text/css" href="css/vendor/font-awesome.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/owl.carousel.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/owl.theme.default.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/magnific-popup.css">

    <!-- ==============================================
    Custom Stylesheet
    ================================================= -->
    <link rel="stylesheet" type="text/css" href="css/style.css" />

    <script type="text/javascript" src="js/vendor/modernizr.min.js"></script>

</head>

<body>
```

Payment Details page



```
<!DOCTYPE html>
<html lang="zxx">

<head>
    <!-- Basic Page Needs
    ================================================== -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
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    CSS VENDOR
    ================================================= -->
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    <link rel="stylesheet" type="text/css" href="css/vendor/font-awesome.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/owl.carousel.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/owl.theme.default.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/magnific-popup.css">

    <!-- ==============================================
    Custom Stylesheet
    ================================================= -->
    <link rel="stylesheet" type="text/css" href="css/style.css" />

    <script type="text/javascript" src="js/vendor/modernizr.min.js"></script>

</head>

<body>
```
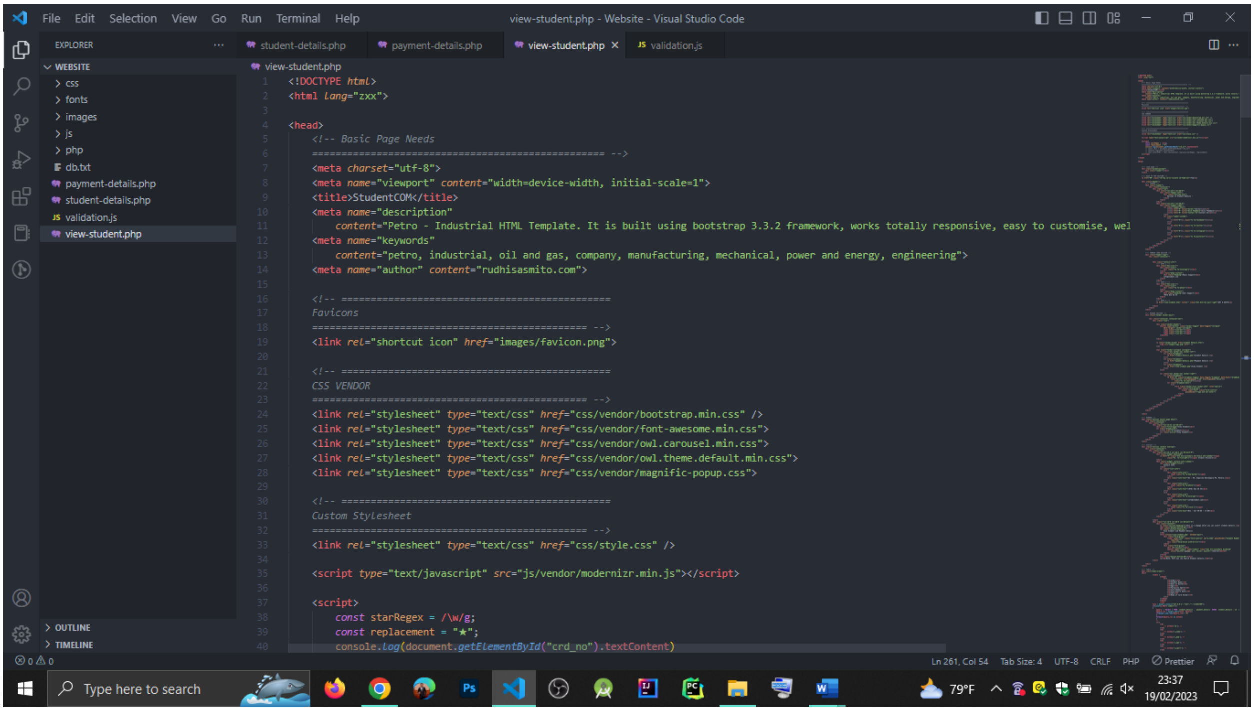

View Student page



```html
<!DOCTYPE html>
<html lang="zxx">

<head>
    <!-- Basic Page Needs
    ================================================== -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>StudentCOM</title>
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    <link rel="stylesheet" type="text/css" href="css/vendor/owl.theme.default.min.css">
    <link rel="stylesheet" type="text/css" href="css/vendor/magnific-popup.css">

    <!-- ==================================================
    Custom Stylesheet
    ================================================== -->
    <link rel="stylesheet" type="text/css" href="css/style.css" />

    <script type="text/javascript" src="js/vendor/modernizr.min.js"></script>

    <script>
        const starRegex = /\w/g;
        const replacement = "★";
        console.log(document.getElementById("crd_no").textContent)
```
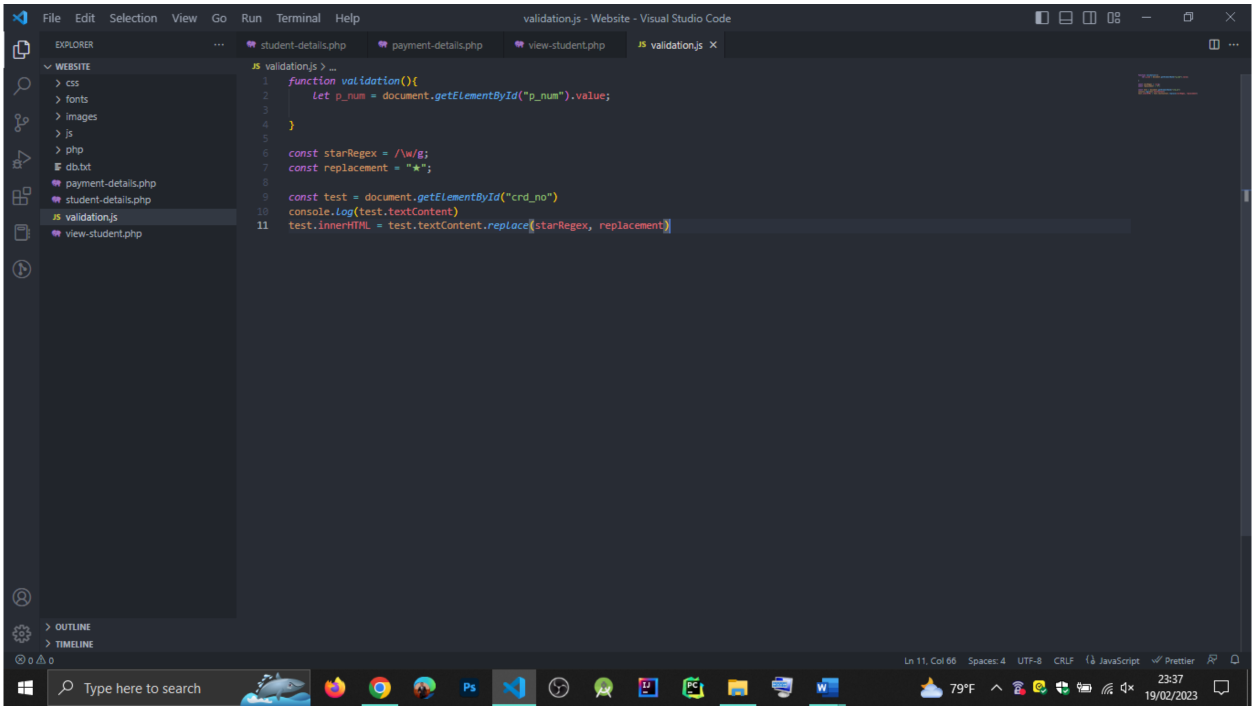

JS Validation



```javascript
function validation(){
    let p_num = document.getElementById("p_num").value;

}

const starRegex = /\w/g;
const replacement = "★";

const test = document.getElementById("crd_no")
console.log(test.textContent)
test.innerHTML = test.textContent.replace(starRegex, replacement)
```

Project File

https://drive.google.com/drive/folders/10Tpjo9dcCGfXvsngkJX-ZQtuCowceib4?usp=share_link

Tools

- VS Code
- MySQL Database

Conclusion

Here I developed a 3-page web application to get the following information from a student and display the collected information for a registration number. Host it on my favorite web server running on your local computer.

References

W3Schools (1998). *W3Schools Online Web Tutorials*. [online] W3schools.com. Available at: https://www.w3schools.com/.

MyBib. (2022). *MyBib – A New FREE APA, Harvard, & MLA Citation Generator*. [online] Available at: http://localhost/phpmyadmin/.