"Investing in Africa's Future"

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

NCIS 403: WEB APPLICATION DEVELOPMENT

END OF SECOND SEMESTER EXAMINATION

APRIL 2024

LECTURER: MR O MAGWAGWA

TIME: 3 HOURS

INSTRUCTIONS

You are required to answer questions as instructed in each section

Start **each** question on a new page in your answer booklet

Answer all questions in **Section A**

Answer any Two (2) questions from **Section B**

Credit will be awarded for logical, systematic and neat presentations
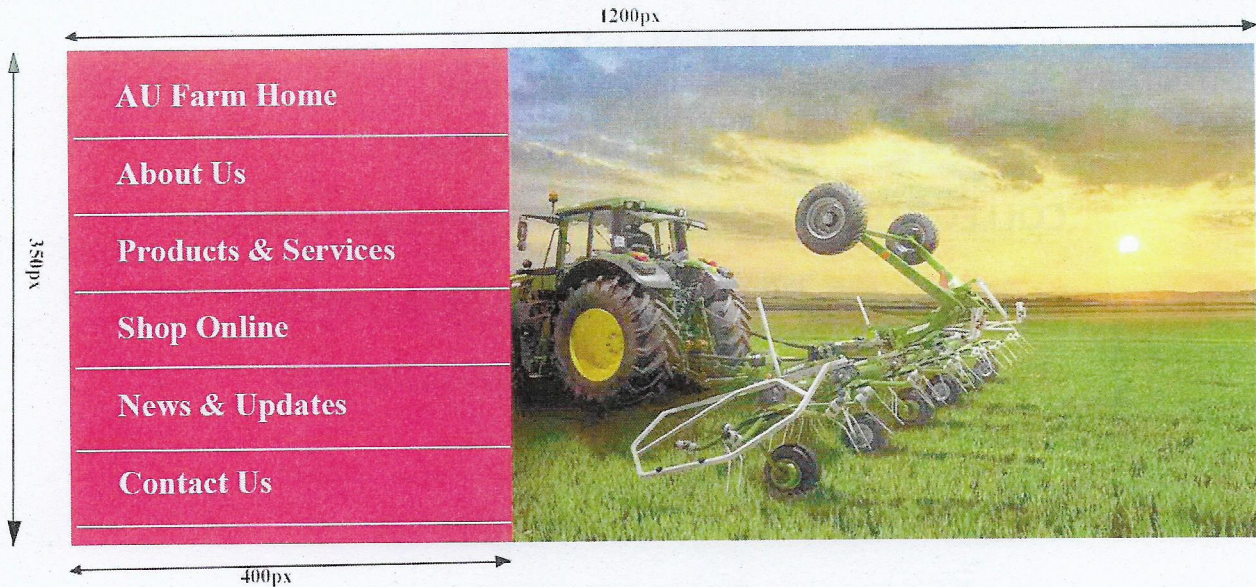
SECTION A

QUESTION ONE

a)

Figure 1: Africa University Farm Website

Figure shows 1 the proposed menu for the Africa University Farm Website. Produce the HTML and CSS code for the menu. Use a separate CSS to the index file and the name of the CSS is style.css. Use the width and height dimensions indicated at the edge of the image.

Additional information:

Background color - #990000

Menu text color - #FFFFFF

Border bottom on menu – 1px, solid and #ffffff

Padding on menu links - 15px

Menu font size - 17px

Image name – slide1.jpg

Links

AU Farm Home - index.html; About Us - about.html; Product & Services - services.html; News & Update - news.html; Shop online- online.html; Contact Us - contact.html;

[12 Marks]

b)

Write a JavaScript function called *calculateGrade* that takes in a numerical grade as a parameter and returns the corresponding letter grade based on the following grading scale:
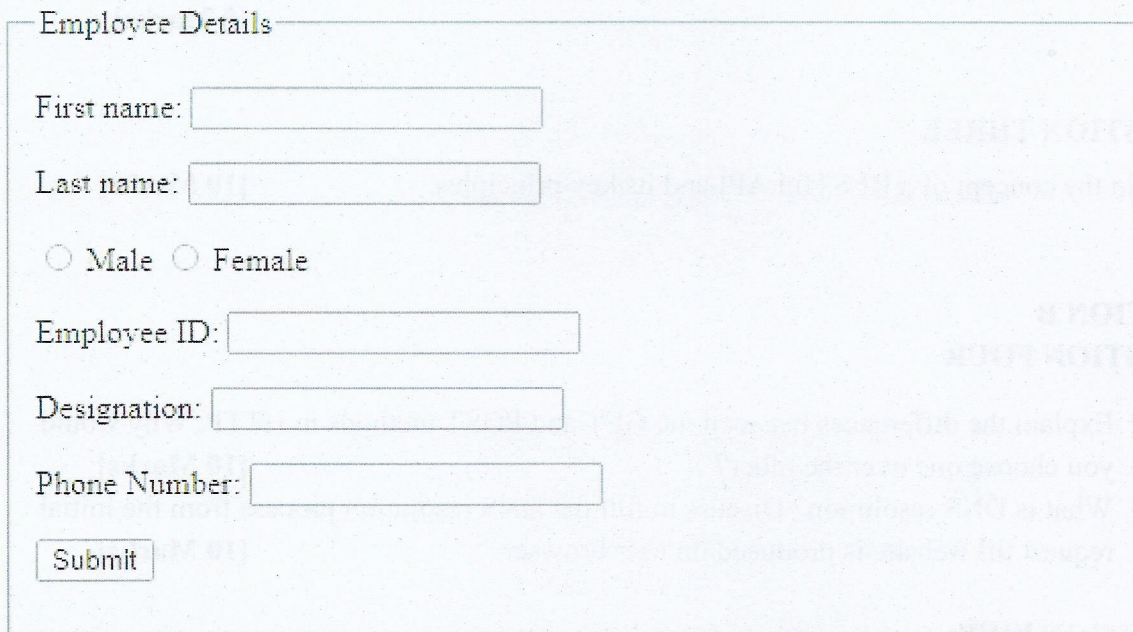
90 and above: A

80 to 89: B

70 to 79: C

60 to 69: D

Below 60: F

Generate the code snippet of the Implement the *calculateGrade* function.   **[8 Marks]**

QUESTION TWO

┌─ Employee Details ────────────────────────────────────┐

First name: [   ]

Last name: [   ]

○ Male ○ Female

Employee ID: [   ]

Designation: [   ]

Phone Number: [   ]

[Submit]

└──┘

Figure 2: Registration Form

Figure 2 shows a registration form for employee driven website with a MySQL Database.

Additional information:

Database Host: localhost

Database username: root

Database password: Test123*

Database name: employees

Designation textfield: txtDesignation

First Name textfield : txtFName

Last Name textfield : txtLName

Date of Birth :txtDOB

Employee ID textfield : txtEmployee

Phone number: txtNumber

Gender radiobutton: rbGender

a) Write the HTML code that generates the Form in figure 2   **[8 Marks]**

b) Produce validation for fields firstname and lastname, making them mandatory.

[4 Marks]

c) Phone number field validation to make sure it only accepts digits *(Using JavaScript)*.

[5 Marks]

d) Produce PHP code that creates a new record in the database table (using your own table name and/or columns). **[8 Marks]**

e) Produce code snippet that will be used to retrieve records from the database table.

[5 Marks]

QUESTION THREE

Explain the concept of a RESTful API and its key principles. **[10 Marks]**

SECTION B
QUESTION FOUR

a) Explain the differences between the GET and POST methods in HTTP. Why would you choose one over the other? **[10 Marks]**

b) What is DNS resolution? Discuss in full the DNS resolution process from the initial request till website is produced on user browser. **[10 Marks]**

QUESTION FIVE

a) Describe the MVC architectural pattern and its significance in web application development. **[10 Marks]**

b) Provide a detailed explanation of each component MVC architecture and their responsibilities in the development process. **[10 Marks]**

QUESTION SIX

a) Describe the difference between organic search results and paid search results.

[5 Marks]

b) How can SEO be used to improve organic rankings? **[5 Marks]**

c) Discuss at length the three SEO components . **[10 Marks]**

END OF EXAMINATION