

# COMPUTER STUDIES

## Paper - 2

### (PRACTICAL)

*(Reading Time: 15 minutes)*

*(Planning Session: one hour)*

*(Examination Session: two hours)*

*(Maximum Marks: 100)*

**(Candidates are allowed additional 15 minutes for only reading the paper.**

**They must NOT start writing during this time)**

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### INSTRUCTIONS

As it is a practical examination the candidate is expected to do the following:  
Answer **two** questions, choosing **one** question from Section A and **one** from Section B.

#### **Planning Session: one hour**

**For the selected C++ program:**

- (a) Write an algorithm for the selected problem.*
- (b) Write a program in C++. Document your program by using mnemonic names and comments.*
- (c) Visualize the HTML code for the problem.*

#### **Examination Session: two hours**

**For the selected C++ program:**

- (a) Type in the designed program and save often.*
- (b) Test run the program on the computer using the given test data.*
- (c) Show the execution to the visiting examiner.*
- (d) Take a print out (hard copy) the program listing.*
- (e) Take a print out (hard copy) of the output in format specified in the problem.*

**For the selected HTML program:**

- a) Type in the HTML code and save often.*
- b) Show the execution to the visiting examiner.*
- c) Take a print out (hard copy) the program listing.*

Attach all the hardcopies to the answer script and submit to the Visiting examiners.

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## Section A

**Solve any One of the following problems.**  
**The program must be written in C++.**

### Question 1

We wish to multiply two matrices. Two matrices are confirmable for multiplication if the numbers of columns in the first matrix are equal to the number of rows in the second matrix.

For example: We have the matrix A of order 2x2 and matrix B of order 2x3, A and B are confirmable for multiplication. The order of the resultant matrix after multiplication will be of the order 2 x 3

$$A = \begin{bmatrix} 2 & 3 \\ 4 & 4 \end{bmatrix}$$

$$B = \begin{bmatrix} 2 & 4 & 5 \\ 1 & 4 & 6 \end{bmatrix}$$

Then

$$C = A \times B = \begin{bmatrix} 7 & 28 & 28 \\ 12 & 32 & 44 \end{bmatrix}$$

Design a function to input a matrix.

Now write a main program and call this function to input two matrices.

Multiply these two matrices and output the resultant matrix if the matrices are confirmable for multiplication.

If the two matrices are not confirmable for multiplication then output a suitable error message.

You may assume that the order of the two matrices of A and B will not exceed 5 x 5

Test your program for the following data and any other data that you can visualize.

### **Sample input 1.**

#### **Input**

$$A = \begin{bmatrix} 1 & 0 \\ 2 & 1 \\ 0 & 3 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 \\ 2 & 4 \end{bmatrix}$$

#### **Output**

$$C = \begin{bmatrix} 0 & 1 \\ 2 & 6 \\ 6 & 12 \end{bmatrix}$$

**Sample input 2.****Input**

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$$

**Out put**

$$C = \begin{bmatrix} 5 & 4 & 4 & 6 \\ 3 & 4 & 4 & 6 \end{bmatrix}$$

**Sample input 3.****Input**

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 1 \\ 2 & 4 \end{bmatrix}$$

**Output**

Not confirmable for multiplication

**Question 2**

We wish to calculate the Personal income tax (PIT) for n people. The tax to be for a person is to be calculated according to the following rules.

Taxable income (Nu)	Income tax (Nu)
$\leq 50000$	nil
Above 50000 but $\leq 60000$	10 % of (income-50000)
Above 60000 but $\leq 150000$	1000 + 20 % (income-60000)
Above 150000	19000 + 30 % (income - 150000)

Design a program that computes Personal income tax for n people.

Test your program for the following data and any other data that you can visualize

**Sample input 1.****Input**

Enter number of people for whom the tax is to be calculated

2

Enter your Personal income

50000

**Output**

Income tax is Nil

**Input**

Enter your Personal income

50001

**Output**

Income tax=Nu 0.1

**Sample input 2****Input**

Enter number of people for whom the tax is to be calculated

3

Enter your Personal income

200000

**Output**

Income tax=Nu 34000.0

**Input**

Enter your Personal income

75000

**Output**

Income tax=Nu.4000.0

**Input**

Enter your Personal income

150000

**Output**

Income tax=Nu.19000.0

## Section B

Solve any One of the following problems.  
The program must be written in HTML.

### Question 3

Write the HTML code to design the following page. Use suitable background color and font color to make your page attractive.

## **MY VIEWS ABOUT DEMOCRACY**

Through out the history of Bhutan as a Nation state the monarchy has served Bhutan and its people. Today political history is in the making in Bhutan with HM spearheading the move towards Democracy. We support and pray for a successful transition.

### ***THE WAY TO BRING SUCCESS FOR ABOVE PLAN***

1. MAKING THE PEOPLE UNDERSTAND THE CONCEPTS OF DEMOCRACY
2. EXPLAINING TO THE PEOPLE THE STRATERGIES FOR THE IMPLEMENTATION
3. REMOVING DOUBTS ABOUT DEMOCRACY THROUGH THE MEDIA

MAIL US AT: [bbs@druknet.bt](mailto:bbs@druknet.bt), [bhutandemo@druknet.bt](mailto:bhutandemo@druknet.bt)

### Question 4

Write the HTML code to design following table. Use suitable background color and font color to make your table attractive.

### ***DEPARTMENT OF IMMIGRATION*** **NATIONALS & FOREIGNERS DETAILS – 2006**

Sln.	Name of the person	From & To	Id card Category	Dzongkhag	Any Remarks
1	Sonam Gyeltshen	Thimphu to Bumthang	Red	Bumthang	HOSPITAL NO 00987654
2	Narayan Rane	Gedu to Trashigang	White	Trashigang	PERMISSION VERIFIED