BACHELOR OF COMPUTER APPLICATIONS (BCA)

(Revised Syllabus)

ASSIGNMENTS

(July - 2022 & January - 2023)

(BCS-051, BCS-052, BCS-053, BCS-054, BCS-055

BCSL-056, BCSL-057, BCSL-058)

ignou
THE PEOPLE'S
UNIVERSITY

**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

CONTENTS

Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.

2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to BCA Programme Guide.

3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the BCA Programme Guide.

Course Code	:	**BCS-051**
Course Title	:	**Introduction to Software Engineering**
Assignment Number	:	**BCA(5)051/Assignment/2022-23**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last Date of Submission	:	**31st October, 2022 (For July, Session)**
		15th April, 2023 (For January, Session)

This assignment has three questions carrying a total of 80 marks. Answer all the questions. Rest 20 marks are for viva-voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1. Develop SRS as per IEEE standard for Railway Reservation System (RRS). Make assumptions wherever necessary. **(30)**

Q2. Develop Design Document for the System mentioned in Question no.1. **(30)**

Q3. Explain the process of estimating cost and effort for a Software Project. **(20)**

Course Code   :   **BCS-052**
Course Title   :   **Network Programming and Administration**
Assignment Number   :   **BCA(5)/052/Assignment/2022-23**
Maximum Marks   :   **100**
Weightage   :   **25%**
Last Dates for Submission :   **31ˢᵗ October, 2022 (For July, Session)**
                               15ᵗʰ April, 2023 (For January, Session)

Answer all the questions of the assignment having 80 marks in total. 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1. **(a)** Explain the working of ARP and RARP.   **(5)**

(b) Explain the concept of subnetting, default mask and subnet mask.   **(3)**

(c) Assume Class B network uses 18 out of 32 bits to define a network address. How many Class B networks are possible in that case? Explain.   **(4)**

Q2. **(a)** Explain any four methods used by HTTP for data transfer.   **(2)**

(b) How many bits are needed for defining Net IDs and Host IDs of Class A, Class B and Class C respectively?   **(3)**

Q3. **(a)** What is the purpose of Dynamic Host Configuration Protocol (DHCP)? List activities between DHCP server and DHCP Client.   **(6)**

(b) Write any four differences between TCP/IP and OSI model. Also draw the layer diagram of each, showing the mapping of OSI and TCP/IP layers.   **(10)**

Q4.   What is the role of DNS in Internet? Explain the steps followed in the domain name resolution with the help of a diagram.   **(5)**

Q5. **(a)** What is Virtual Private Network (VPN)? Write its advantages and disadvantages. Also compare VPN with Free NX.   **(8)**

(b) Discuss the standard socket types and its corresponding protocols. Explain using the proper syntaxes and examples, the system calls used by the client and a server to establish connections before data transfer.   **(6)**

(c) Write step-by-step procedure to configure a Samba Server. Assume server IP address is 192.168.0.55 and server machine name is "IGNOU".   **(8)**

Q6.   Explain the commands being used in Linux environment for problem diagnosis and trouble shooting.   **(8)**

Q7. Discuss the various disk management functions. What are the tasks **(6)** followed for secure disk management? Elaborate.

Q8. Explain the Stateless Operation and NFS Daemons in the context of **(6)** Network File System.

Course Code	**:**	**BCS-053**
Course Title	**:**	**Web Programming**
Assignment Number	**:**	**BCA (5)053/Assignment/2022-23**
Maximum Marks	**:**	**100**
Last Date of Submission	**:**	**31ˢᵗ October, 2022 (For July, Session)**
		15ᵗʰ April, 2023 (For January, Session)

This assignment has two questions of 80 marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Please give precise answers. The word limit for each part is 300 words.

Q1. (Covers Block 1)

a) Explain the features of the following technologies: **(6)**
   (i) Rich Internet Applications
   (ii) Blogging
   (iii) Social Networking
Also explain how have these technologies affected us?

b) (i) Create an online membership form of a library using HTML. The form should ask for the following information: **(3)**
   - Your studentId, which is to be used as username.
   - A password, which is to be chosen by you (password should be at least 6 character long)
   - Name of the Student
   - Programme in which the student has taken admission (You should create a drop-down list of about 4 to 6 Programmes for selection, default value for Programme should be **BCA**)
   - Select from the options Yes/No to the question "Was a member earlier?"
   - The form should include a SUBMIT FORM button.

   (ii) Create an external CSS file for this form. This CSS file should select the font size of 14 points for all the labels; font colour should be dark green for the headings and blue for normal text. The background colour of the form should be light blue. **(2)**

   (iii) Write the code using JavaScript that validates the data entered in the username and password fields of the form. **(3)**

   Submit the HTML code, JavaScript code and screenshot of the form opened in a browser window. You must demonstrate the form at the time of viva.

c) Using a table, create a webpage displaying the list of all the Units of BCS053 course. This table should have headings. The columns of the table should display the serial number, name

6

of the unit and a list of topics of the Units. Create a second page using an ordered list showing the objectives of BCS053 course. You should use <div> tags, wherever needed; and create an internal CSS file, which formats the web pages as follows: (You must submit the HTML and CSS code and the screenshot of pages in a browser window) **(6)**

(i) The headings of the table must be in Bold and italics and all other content should be in italics font.

(ii) The table heading should be in different shade. The data rows of the table should have alternatively light blue and light pink colour. The background of the table should be light green.

(iii) The font of the unordered list should be "Times New Roman" with font size of 14 points. The background colour of list should be light yellow.

You must demonstrate how changes in CSS can change the display at the time of Viva.

d) A retail store maintains the list of all its Products using XML. Product information consists of a Product Code, which can be used as its attribute in the XML document. The following information is stored about the Product – Name of the product, Unit of measurement of Product (e.g., ml, kg, grams etc.), the quantity in a pack, price of that pack. Create an XML document containing information of five such Products. Also create the DTD to verify the XML document created by you. **(8)**

e) Write and demonstrate (at the time of viva) JavaScript code that displays the message "This is Time Driven JavaScript Code" and changes this text to "Client-side coding demonstration" after 15 seconds. You may use event handling. Make suitable assumptions, if any. **(6)**

f) Explain the WAP Model and its working. Explain the following WML elements with the help of an example: **(6)**
- Use of italics font
- Anchor element in WML
- WML <select> element

Q2. (Covers Block 2) (10×4=40)

a) Explain the following with the help of a diagram/example, if needed:

 (i) MVC Architecture

(ii) Request and Response Primitives of HTTP

(iii) Tools for server-side scripting

(iv) Web Containers and their role

(v) GET and POST methods of HTTP

b) Explain with the help of an example/diagram or write code for the following using JSP:
a) Creating dynamic contents using JSP.
b) JSP *page* and *include* directives.
c) Write a JSP scriptlet to display a list of odd numbers till 20.

7

d) <jsp:setProperty> and <jsp:getProperty> action elements of JSP

e) *out* and *pageContext* implicit objects in JSP

c) Write JSP programs which can perform the following tasks (you may create a single or multiple webpages for these tasks):

(i) Write the JSP code to create a webpage that requires input of four variables x, y, z and a; after successful input of values in the variables, the JSP program finds and displays the smallest of these four variables.

(ii) Create a registration page consisting of three fields namely username, password and type of user (student/faculty/staff). Successful registration should create two cookies one for username and second for the type of user.

d) Create a database for a Student Result system consisting of the following two tables:

Student (SID, name, ContactAddress)

Results (SubjectID, SID, Marks)

Develop and deploy a web based "Result Display System" using JSP, any database backend and any web server. Your system should use JDBC for input of information to both the tables. The system should output SID wise Results of all the students on the screen.

Submit the JSP program, screens and database of the system. You must demonstrate this system at the time of viva voce.

Make and state suitable assumptions, if any.

Course Code	:	BCS-054
Course Title	:	**Computer Oriented Numerical Techniques**
Assignment Number	:	**BCA(5)/054/Assignment/2022-23**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last Dates for Submission	:	**31ˢᵗ October, 2022 (For July, Session)**
		15ᵗʰ April, 2023 (For January, Session)

This assignment has eight questions of total 80 marks. Answer all the questions. 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Illustrations/ examples, where-ever required, should be different from those given in the course material. You must use only simple calculator to perform the calculations.

Q1.

(a)   Use the eight-decimal digit floating-point representation as given in Block 1, Unit 1, Section 1.3.1 page 29 to perform the following operations: **(6)**

(i) Represent 0.09091919 and 2134650987 as floating-point numbers in normalized form using rounding for first number and chopping for second number.

(ii) Find the absolute and relative error in the representation of the two numbers given above.

(iii) Using the floating-point representation as above, perform the addition and multiplication of the two numbers given in part (i). Find the absolute error in the results of the two operations.

(iv) Using the floating-point representation as above, divide the second number by the first number. Convert the result into normalized form.

(v) Using the given eight-decimal digit floating-point representation and taking the first number as 5432198765012343210; demonstrate the concept of overflow or underflow. You may assume any second number for demonstrating the concept.

(vi) What is the meaning of *bias,* which in used in exponent of floating-point representation? Explain with the help of an example.

(b)   What is Subtractive Cancellation in the context of floating-point numbers? Explain with the help of an example. Is there any concept called additive cancellation?   **(2)**

(c)   Find the Maclaurin series for $f(x) = e^{5x}$ at x=0. Use first four terms of this series to compute the value of the function at any value of x. Also find the bounds of truncation error.   **(2)**

Q2.

(a)   Solve the system of equations   **(5)**

$x - 7y + 3z = 18$

$5x - 2y - z = 8$

$3x + 4y + 5z = 0$

using Gauss elimination method with **partial pivoting**. Show all the steps.

(b)   Perform four iterations (rounded to four decimal places) using   **(5)**

(i)   Jacobi Method and
(ii)   Gauss-Seidel method
for the following system of equations.

$$\begin{bmatrix} 5 & 1 & -2 \\ 3 & -7 & 2 \\ -1 & 2 & 6 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 5 \\ -9 \\ 9 \end{bmatrix}$$

With $\mathbf{x}^{(0)} = (0, 0, 0)^T$. The exact solution is $(1, 2, 1)^T$.

Which method gives better approximation to the exact solution?

Question 3.

Determine the smallest positive root of the following equation: **(10)**

$$f(x) = 2x^4 - 3x^3 + 5x - 7 = 0$$

The root should be correct up to two decimal places, using

(a) Regula-falsi method   (b) Newton-Raphson method

(c) Bisection method   (d) Secant method

Question 4.

(a)   Find Lagrange's interpolating polynomial that fits the following data. Hence obtain the value of f(5).Also make the Newtons Divided difference table for the following data.

(5)

x	1	2	4	7
f(x)	4	9	25	64

(b) Using the Lagrange's inverse interpolation method, find the value of x when y is 5. **(5)**

x	0	6	42	210
y=f(x)	1	3	7	15

Q5.

(a) The Expenses of a University for 5 different years are given in the following table:

(3+2+3 = 8)

Year (x) :	2014	2016	2018	2020	2022
Expenses (y) (in Crore Rs) :	16	20	28	32	40

(i) Using Stirling's central difference formula estimate the Expense for the year 2017
(ii) Using Newton's forward formula estimate the Expense for the year 2015.
(iii) Using Newton's backward formula estimate the Expense for the year 2021.

(b) Derive an expression for Shift operator and forward difference operator in terms of δ.

(2)

Q6.

(a) Find the values of the first and second derivatives of $y = 4x^2+10x-9$ for x=1.25 using the following table. Use forward difference method. Also, find Truncation Error (TE) and actual errors. **(5)**

x	:	1	1.5	2	2.5
y	:	5	15	27	41

(b) Find the values of the first and second derivatives of $y = 4x^2+10x-9$ for x=1.25 from the following table using Lagrange's interpolation formula. Compare the results with (a) part above. **(5)**

x	:	1	1.5	2	2.5
y	:	5	15	27	41

Q7.

Compute the value of the integral **(10)**

$$\int_0^{10} (2x^3 + 5x - 9)\ dx$$

By taking 10 equal subintervals using (a) Trapezoidal Rule and then (b) Simpson's 1/3 Rule. Compare the result with the actual value.

Q8.

(a) Solve the Initial Value Problem, using Euler's Method for the differential Equation: **(4)**

$$y' = 1+4x^3y, \text{ given that } y(0) = 1.$$

Find $y(1.0)$ taking (i) $h = 0.20$ and then (ii) $h = 0.5$

(b) Solve the following Initial Value Problem using (i) R-K method of $O(h^2)$ and (ii) R-K method of $O(h^4)$ **(6)**

$$y' = x^3y + x^2 \text{ and } y(0) = 1.$$

Find $y(0.4)$ taking $h = 0.2$, where y' means dy/dx

This assignment has 10 questions. Answer all questions. Assignment is for 100 marks. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Read the passage below and answer the questions that follow:

Job interviews can be difficult and stressful. If you are currently looking for work and preparing yourself for an interview there are a few areas to consider in order mastering an interview. They are:

Practice: The first thing needed is practice, as "practice makes perfect'". This is especially true when it comes to job interviews. The more you practice, the better you will become. The best way to practice for an interview is to look at the typical questions that are asked during the interview. While some of the questions may be different, there are a few generic questions that will be asked commonly. However, it isn't just enough to know the answers to these questions. You must know how to answer them. The way you answer is just as important as the questions themselves.

When attending an interview, you should be able to explain with examples how you've used your skills and experience to solve problems. You thus build your credibility and impress the person interviewing you. Anyone can list their skills on a piece of paper. However, it takes a high level of skill to explain these things in detail during the interview process.

Prepare: The next thing needed is to be prepared. The best way is to review the common questions which will be asked. Never allow yourself to be caught off guard. Surprises lead to failure, and can stop you from getting the job. Learn the name of the person who is conducting the interview, and use it while speaking to them. This conveys the message that you are professional and polite.

Attire: Once you are prepared, you will next need to dress appropriately for the interview. Proper interview etiquette requires interviewees to be in an attire that is fitting to the environment around them. Always remember not to overdress and under-dress. Along with dressing well and decently, neatness in appearance matters a lot, too. Clothes should be well-pressed and aptly worn. Shoes should be polished and must be appropriate for the occasion. A pair of black shoes for men is a neutral and safe colour that goes along with any colour of the

suit. Ladies must refrain from shoe colours that are too bright especially if it does not complement the dress worn. Hair should be well-combed and nails must be properly trimmed . Keep the make-up and cologne or perfume light. Make sure you wear minimal and unobtrusive jewellery. Do not wear bracelets, bangles or anklets that make a rattling sound.

Body language: Everybody uses body language, but it takes place mostly at a subconscious level. It gives out a lot of information on the type of person one is. Based on the body language it can be seen if one comes across as insecure or self-assured, a busy or a quiet type, stressed out or relaxed and whether one is speaking truthfully or not.

Q1. Say whether the following statements are *true* or *false*. Correct the false statements. (**5**)

(a) In any interview situation most of the questions are those which are commonly asked in all interviews.

(b) It is important to answer all the questions asked in an interview.

(c) How one uses one's previous experience and skill set to solve problems at the workplace makes a positive impression in an interview.

(d) It is not important to know the name of the person who is interviewing you.

(e) Ladies must wear makeup and wear jewellery so that they look good at an interview.

Q2. Answer the following questions. You may also include your own views if required.

(a) What do you think are some of the generic questions that are commonly asked at interviews? List four such questions. (**2**)

(b) Keeping the suggestions given in the section on **attire** how would you dress for an interview? (**2**)

(c) Give an appropriate title to the passage. (**1**)

Q3. Give the opposite of the following words. You will find these words in the passage. (**6**)

(a) Peaceful

(b) Previously

(c) Specific

(d) unusual/unique

(e) Success

(f) Rude

Q4. Find the meaning of the following words/phrases and use them in sentences of your own: **(4)**

(a) build your credibility

(b) caught off guard

(c) Etiquette

(d) refrain from

Q5. Complete the following sentences by putting the verbs in the Simple Past, Past Perfect or Past Continuous Tense: **(10)**

(a) Although we…………..(invest) a lot of money in the project, we …………..(decide) to pull out of it.

(b) When his father…………..(die), he …………..(run) the business.

(c) Arjun Sembale…………..(be) in charge of the shop in Gurgaon before he …………..(take) over the company.

(d) While my father…………..(build up) the business in the North, I …………..(do) the same in the South.

(e) While Natalia…………..(talk) to the Manager, the workers………….. (pack) the garments ready for dispatch.

Q6. Fill in the blanks with suitable articles (*a/an, the* or no article *Ǿ*): **(10)**

(a) …………..people often say that …………..writer's life is unimportant, and all that matters is in …………..books. That is usually …………..exaggeration. Books are important but …………..lives are important too.

(b) …………..mangoes are selling at Rs. 40 …………..kilo.

(c) Is this …………..book you were telling me about? Yes, it is about …………..life of …………..Ambedkar.

Q7. As a warden of kaveri hostel, you have noticed that some of the students residing in this hostel smoke and drink in the night. This is against the rules. Write a memo to the students: **(10)**

(a) Clearly forbidding them from smoking and drinking

(b) Stating the punishment that will be meted out to them if they are caught smoking/drinking in the hostel premises

Q8. Discuss the different styles of communication. What kind of style do you prefer and Why? **(20)**

Q9. Imagine that you attended one of the following courses during the summer vacation last year: **(15)**

- A course in Python
- A course in Cyber Security

Write a report on the course mentioning:
(a) Factual details
(b) Effectiveness and limitations of the course
(c) Lab Facilities

Q10. You are a group of 6 friends, interested in visiting Vietnam. You have seen an advertisement of Awesome Travels on the web. Write an email to them to enquire about a one week trip to Vietnam. Ask about the following: **(15)**

- Visiting Places
- Accommodation
- Organization of sightseeing
- Total cost per head
- Itinerary

|		
Course Code	:	**BCSL-056**
Course Title	:	**Network Programming and Administration Lab**
Assignment Number	:	**BCA(5)/L-056/Assignment/22-23**
Maximum Marks	:	**50**
Weightage	:	**25%**
Last date of Submission	:	**31ˢᵗ October, 2022 (For July, Session)**
		15ᵗʰ April, 2023 (For January, Session)

Note: Answer all the questions in the assignment having 40 marks in total. 10 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Make suitable assumption is necessary.

Q1. Write and execute a TCP client and a server program in C-language to perform **(10)**
the following tasks:
- The TCP client program sends two strings to the TCP server program to concatenate these two strings.
- The TCP server program sends the concatenated strings to the client.

Q2. Configure the DHCP server on the Linux operating system . Write all the steps **(10)**
involved in configuration. Sort each column of the table and show the result.

Q3. (a) Run the following Linux commands on your machine and show the output: **(10)**
- **df − h**
- **ps-ag**
- **ping**
- **cat**
- **tail − f**

(b) Write and run commands in Linux for the following tasks: **(10)**
- Add new users
- Display the list of users who belong to different groups
- Display the list of users who are currently logged on.
- List all the processes which are currently running in the systems.
- List all file names that have a letter **e** as 5ᵗʰ character in their name

Course Code	:	BCSL-057
Course Title	:	Web Programming Lab
Assignment Number	:	BCA(5)/L-057/Assignment/2022-23
Maximum Marks	:	50
Weightage	:	25%
Last Dates for Submission	:	31ˢᵗ October, 2022 (For July, Session)
		15ᵗʰ April, 2023 (For January, Session)

This assignment has one question of 40 marks. Rest 10 marks are for viva voce. Please go through the guidelines regarding assignments given in the programme guide for the format of presentation.

Q1. Create a website for a Student Hostel, which maintains details of the students staying in the Hostel. Design the website using logical divisions through <div> tags and an external CSS file. Every page of the website should be divided into four divisions namely – *Welcome Division*, *Room Information*, *Menu Options* and *Copyright Information*, as displayed in the following figure:
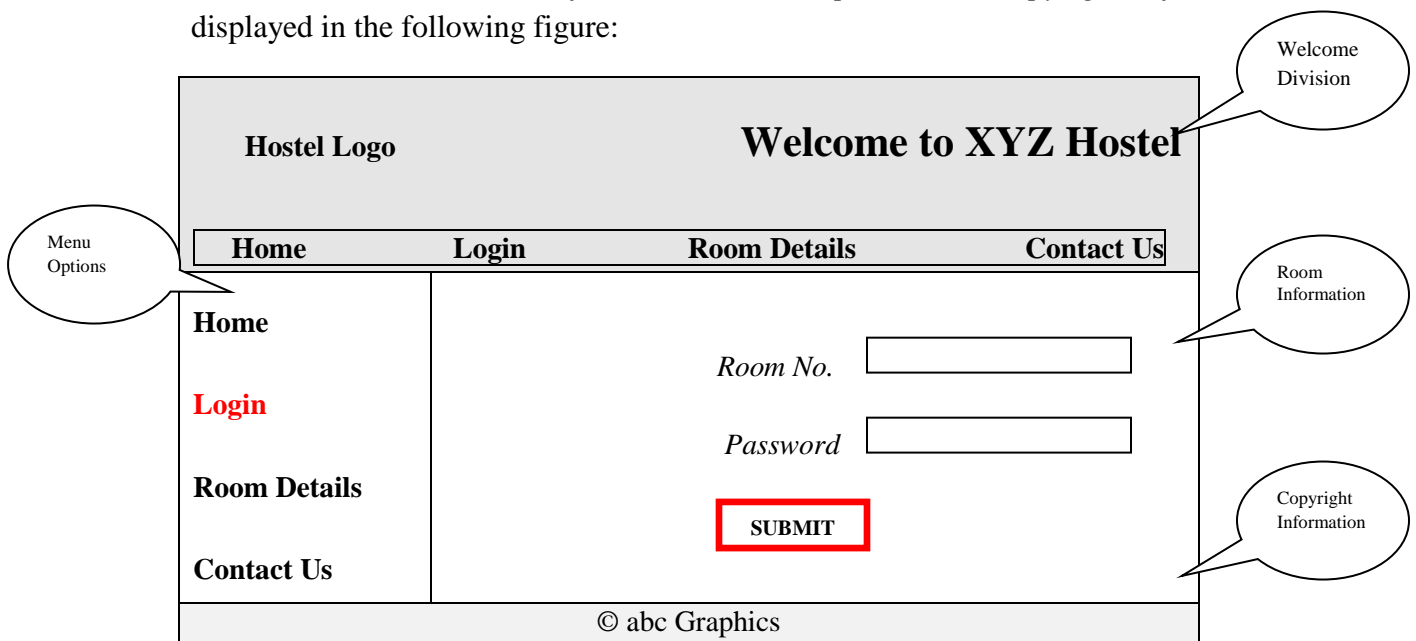
Perform the following tasks relating to the website, as given above:

[Part (a) : 5 Marks ; Part (b) : 5 Marks; Part (c) : 5 Marks; Part (d) : 5 Marks; Part (e): 20 Marks]

(a) Create four pages for the website viz. Home, Login, Room Details and Contact Us; all the four pages should have same *Welcome Division*, *Menu Options* and *Copyright Information* divisions but different *Room Information* division.

(b) The *Menu Options* Division should provide links to the Home page, as well as to other three pages. All these four options should be available in all the web pages designed by

18

you for this assignment. Thus, this *Menu Options* division may be used for navigating among the four web pages. The *Room Information* division of every page should be different. The information that should be displayed in *Room Information* Division of each of the pages is described below:

(i) The Home page should display a Message from the Hostel Warden.
(ii) The Login page should display a form for logging into the Hostel Information system for getting details related to the rooms.
(iii)The Room Details page should display the list of vacant rooms.
(iv)The Contact Us page should display a form asking for student email id, a text area field for writing the question or query and a Submit Button.

(c)   Create an external CSS that gives different background colour to each division of the webpages. You may choose the format of other elements as per your choice.

(d)   Create a JavaScript program that generates an error message if *RoomNo* field is left blank in the form of Login page; or if the length of entered password in the password field is less than 7 characters. In case of an error, after displaying the error message for about 5 seconds, the login form should be reset and displayed again.

(e)   Implement the following pages using jsp program, servlets, java classes, database(s), etc.

(i) When user presses the Submit button after properly filling *RoomNo and password* in the Login page form, these details are checked in a database, and in case, the entered *RoomNo* and *password* are correct, the room occupant Name, and room number is displayed on the screen. You may also create a cookie, if needed, to remember the room number and password.
(ii) On selection of Room Details option, the list of rooms, which are presently vacant are displayed. The list of vacant rooms should be dynamically created using a database.
(iii) When you press the Submit button of the *Contact Us Form*, the information entered in the form should get stored in a database table.
(iv) You must design, create and use suitable database tables for the sections given above.

You may make suitable assumptions, if needed.

Course Code	:	BCSL-058
Course Title	:	Computer oriented Numerical techniques Lab
Assignment Number	:	BCA(5)/L-058/Assignment/2022-23
Maximum Marks	:	50
Weightage	:	25%
Last Dates for Submission	:	31st October, 2022 (For July Session)
		15th April, 2023 (For January Session)

This assignment has five problems, each of 8 marks. All problems are compulsory. 10 marks are for viva voce. Please go through the guidelines regarding assignments given in the programme guide for the format of presentation.

Note: The programs are to be written in C/C++ and/or in MS-Excel/Any spread sheet.

Q1. Write a program in C/C++ to find the solution of system of linear equations (given **(8)** below), by using Gauss- Elimination method:

$$x + y + z = 2$$
$$x - 2y + 3z = 14$$
$$x + 3y - 6z = -23$$

Q2. Write a program in C/C++ to determine the approximate value of the definite integral **(8)** (I) (given below), by using Simpson's (1/3)rd rule:

$$I = \int_{0.2}^{1.0} x^{1/3} \, dx,$$

Using step size $(h) = 0.2$.

Q3. Write a program in C or C++ to demonstrate the following operations, for the **(8)** function $f(x) = x^2 + x + 7$:

   (a) Forward Difference Operator
   (b) Central Difference Operator

Q4. Write a program in C/C++ to find the value of $\mathrm{Sin}(\pi/6)$ by using Lagrange's **(8)** Interpolation, the related data is given below

x	: 0	$\pi/4$	$\pi/2$
y= Sin(x)	: 0	0.70711	1.0

Q5. Write a program in C/C++ to calculate the value of "$\cos x$" by using the series **(8)** expansion given below:

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \cdots$$

Note: Evaluate $\cos x$ only upto first three terms.

Also find the value of $\cos x$ by using the inbuilt function.

Compare the results i.e., the result produced by your program and that produced by inbuilt function. Based on comparison, determine error.