

NBA Accreditation

(Report Generation System)

1. Type of Requirement

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- i. Functional The system generates the report of NBA accreditation
 - (a) Generating Accreditation, matching CIF outcome with program outcome, taking feedback from students on their program outcome, taking indirect feedback from teacher etc
- ii. Domain reflect characteristics of application domain
 - (a) Branch wise course outcomes
 - (b) Standard for storing feedback forms

II.

- i. Input
 - (a) Student feedback
 - (b) Marks List
 - (c) CO List
 - (d) PO List
 - (e) Correlation Matrix (Correlation between CO and PO)
 - (f) CO vs AC (Assessment Component) Details
- ii. Constraints
 - (a) All student may not fill feedback form.
 - (b) Faculty has to provide details (like Excel Sheets) in the format as mentioned.
 - (c) In the marks list the entries of marks is of only integer type.

iii. Process

- (a) Procedure of generating NBA Report
- (b) Calculating Success % for each Assessment Component for corresponding to each course
- (c) Calculating Direct Weight from direct feedback obtained.
- (d) Calculating weighted sum for CO with respect to AC for every course.
- (e) Calculating indirect weight and generating course code table(from direct feedback) and end of course survey table(indirect feedback).

iv. Output

(a) NBA Accreditation Report containing course code table(from direct feedback) and end of course survey table(indirect feedback).



2. Feature Set

- I. What all features?
 - i. Student feedback is received with the help of this system.
 - ii. Indirect feedback is received with the help of this system.
 - iii. NBA Report will be generated by this system.
- II. How much customization:
 - i. Apply various kinds of operations to generate reports

3. GUI -

- Home page
- Faculty Login
- Student Login
- About Us
- Upload pages for CO and PO statements, marks, CO/AC and correlation matrix.
- Feedback Form page.

4. Data

- I. type of data
 - i. feedback submitted by students ,From Teachers: CO/AC assessment, marks list , CO statements ,PO statements.
- II. Scalability how much data
 - i. details of 150 courses
 - ii. feedback from 2500 students

5. People involved

- I. Type of users:
 - i. Faculty Members, Students,
- II. Process
 - i. Life cycle of process
 - (a) Process of feedback submission from students.
 - (b) Process of upload of marks ,CO/AC assessment from faculty memebers etc.
 - (c) Calculating Success % for each Assessment Component for corresponding to each course.
 - (d) Generating NBA Accreditation Report containing course code table(from direct feedback) and end of course survey table(indirect feedback)
 - ii. Transparency level
 - (a) Faculty can only view the generated report

6. List of problems faced by user in current system

I. There is no existing system for NBA accreditation in the college



NBA Accreditation

All over the world, governments and

international communities are working towards the goal of improving the quality of education by investing in pieces of training, improving general grading schemes, and taking up many other initiatives.

To take this initiative forward our institute has been following the outcome-based approach to learning and has recently been accredited by National Assessment and Accreditation Council (NAAC). Accreditation is a process of validation where institutions providing higher education are evaluated on their quality status. There are a set of standards over which a committee reviews the institution. The analysis is done based on institute's policies and student performance. A major consideration is how learning assessment criteria that provide comparable data between objectives and outcomes are correlated.

Accreditation is useful in different contexts at various levels in the following ways:

- Students: Choosing the right institutes for their higher studies and proper growth.
- Faculty: Good academic environment and a better career Prospect.
- Parents: Assurance of quality education to their wards.
- Alumni: Reputation and better career paths.
- Industries and Employers: Recruitment of well-qualified, competent and role-ready graduates

Accreditation and global mobility:

The Washington Accord: The Accord was signed by six countries in the year 1989. India is officially a member of the Washington accord from 13th June 2014 with the permanent signatory status of the National Board of Accreditation (NBA). Graduation from an accredited program is Educational Passport for engineers' mobility across a good number of international institutions in prosperous countries of high reputation. If India wants to procure the profits of its large human resource and to become a knowledge society and global supplier of trained human resource, it is must to be a full signatory of Washington accord.



OUTCOME-BASED APPROACH TO LEARNING:

Outcomes are statements that describe the behavior of learning by the student at the end of a course. Objectives are the goals that are set to be achieved against which the performances can be evaluated. These tell what any program intends to accomplish. These should be in line with the nature of courses under it, the skills students have and need, and the missions of the institute. Objectives can be cognitive, affective and behavioral. It should answer what competency categories students should know. Outcome-based learning focuses on learning rather than just on teaching.

KEY COMPONENTS OF OUTCOME BASED APPROACH

The key components of Outcome based approach to learning include, Vision and Mission, Graduate Attributes, Programme Educational Objectives (PEOs), Program Outcomes (PO), and Course Outcomes (CO).

- Vision Statement As the name suggests, it describes what is the vision
 of the institute, its current and future plans on how to achieve what all they
 aspire to or the goal they have set.
- Mission statement This statement is to describe the purpose of the institutes and the programs it offers. The mission of the program should be in accordance with the mission and vision of the institute.
- Graduate Attributes Graduate Attributes are the qualities that any
 university aims to help you develop by the time you graduate. They are not simply
 taught but developed through meaningful experiences and the processes of
 learning and reflection. The Graduate Attributes of the NBA are as following:

Graduate attributes	PO No.	PO Statements
Engineering knowledge	PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
Problem analysis	PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and e
Design/development of solutions	PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the publ
Conduct investigations of complex problems	PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to p
Modern tool usage	PO 5	Modern tool usage:Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understand
The engineer and society	PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional e
Environment and sustainability	PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable develop
Ethics	PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
Individual and team	PO 9	Individual and Team Work:Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
Communicatiobn	PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and desi
Project management and finance	PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply these to one's own work, as a member and leader in a team, to management principles and apply the principles are the principles and the principles are the princi
Life-Long learning	PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
Professional Skill	PSO-1	Achieving professional skills in scientific methodologies, algorithm, state-of-the-art hardware and software, related to the domain of Electronic and Communication Engineering and its sub-domains like Sign
Research	PSO-2	Use research and innovative practices , strategies, and tactics, gained in the undergraduate programme, to pursue a dedicated career in the emerging areas of Electronics and Communication Engineering in
Entrepreneurship	PSO-3	Generating dedicated entrepreneurs mastered with the capacity and willingness to develop and manage business ventures out of innovative ideas toward immediate real world applications relevant to the soc



Program me Educational Objectives (PEOs) - Program Educational Objectives are crucial as these portray the final mean to decide the level of excellence of a program.

Professional Skill

PSO-1: Achieving professional skills in scientific methodologies, algorithm, software and hardware, related to the domain of Electronic and Communication Engineering and its sub-domains like Signal processing, VLSI Circuits, Embedded systems, Microwave, and RF systems, in handling challenging technical jobs and services.

Research

PSO-2: Use research and innovative practices, strategies, and tactics, gained in the undergraduate programme, to pursue a dedicated career in the emerging areas of Electronics and Communication Engineering in advanced research and development establishments and Accomplishment.

Entrepreneurship

PSO-3: Generating dedicated entrepreneurs mastered with the capacity and willingness to develop and manage business ventures out of innovative ideas toward immediate real-world applications relevant to the society.

Program Outcomes (PO) - Program Outcomes reflect those particular in-formation and aptitudes you hope scholars will secure as part of their educational experience in the program.

• Course Outcomes(CO) - Most fundamental to outcome-based learning. Course outcomes describe what the learners will be able to do as the course ends when they gain complete knowledge from the whole course. It is a must for each course outcome to align with one of the program outcomes.

CO1	CO statements									
	Should be able to understand functions, operational principles of the various components of cellular wireless networks, connections setup and analyze capacity improvement Techniques									
CO2	Will realize the complicated nature of wireless propagation and be able to apply different models to calculate link budget, path loss and estimate channel condition by simulation and/or analysis carried using state of art the practices.									
соз	Will be able to understand and compare different modulation schemes and multiple access techniques used in wireless communications.									
CO4	Design and optimize a cellular system for a service area considering traffic, mobility, coverage, capacity, QoS,Fading, shadowing etc.									
COS	Become familiar with some of the existing and emerging wireless standards.									
CO6	null									
CO7	null									



Correlation between Course Outcomes and Program Outcomes:

Course outcomes must be mapped to program outcomes. Following table shows how it is done.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
01	3	2	0	3	0	2	0	0	0	0	0	2	3	2	0
CO2	0	3	0	0	3	2	0	0	2	2	0	0	3	3	0
CO3	0	0	3	2	0	0	0	0	2	1	0	0	2	2	0
04	0	0	3	3	0	0	2	2	2	1	0	0	3	3	2
:05	1	0	0	0	3	2	2	0	0	0	2	3	3	3	0
06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Correlation Matrix

SOFTWARE REQUIREMENT SPECIFICATION:

This project is a smart documentation project. So, the major requirements for the project are to extract the information from the text document of a specific format, operate on the data retrieved and then display the data on a web page.

Following is the major functioning of the project and the software requirements for it and their integration to acquire desired results.

SOFTWARE

Backend:

- 1. **Eclipse Oxygen** Java IDE used, latest release of Eclipse IDE. Eclipse is an Integrated Development Environment (IDE) used for mainly developing Java applications. It is a cross platform IDE written in Java too. Eclipse support development for Tomcat server and hence, is the server used for creating this smart documentation application.
- 2. **Apache POI** used for creating JAVA APIs for reading Microsoft Excel files in Java.It provides libraries of Java for reading and writing files in formats of Microsoft Office.It can be used for other file formats too based on OOXML standards and OLE2 format Office OpenXML format is the XML file format found in Microsoft Office 2007 and 2008 suite Major use of this API is for text extraction and hence, useful in our smart documentation application. This includes XLSX, DOCX and PPTX.
 - 3. **Apache Tomcat or TOMCAT** server provides HTTP web server environment in which Java code can run. It is developed by open source communities. Tomcat started off in November 1998. Tomcat implements several Java EE specifications.

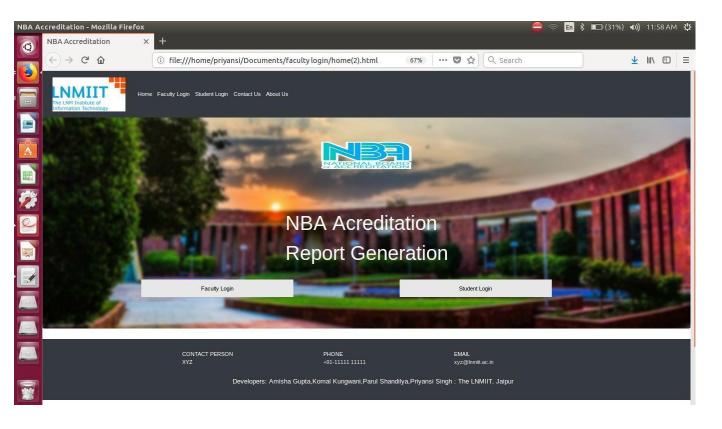


Frontend:

For developing the front end of this smart documentation application, HTML, CSS and JavaScript is used.

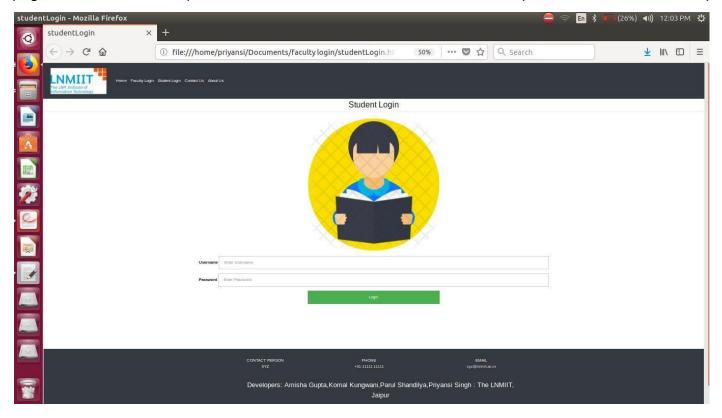
- 1. **HTML** (Hypertext Markup Language) is a markup language used for creating web applications. It defines the structure of a web page. It was released 24 years ago in 1993.
- 2. **CSS** (Cascading Style Sheets) is a language describing the style on HTML file/pages. It can be used to change the style of web pages in easy and simple manner. JS (JavaScript) is a dynamic programming language, which provides dynamic interactivity to web pages when used with HTML. It was released 24 years ago on December 4, 1991. All the browsers support it and have in-built engines for it

Home Page: This is the homepage of our web application which contains the link to all the other pages of our app. This page contains two Buttons Faculty Login and Student Login. On pressing these buttons you will be directed to the respective login pages.

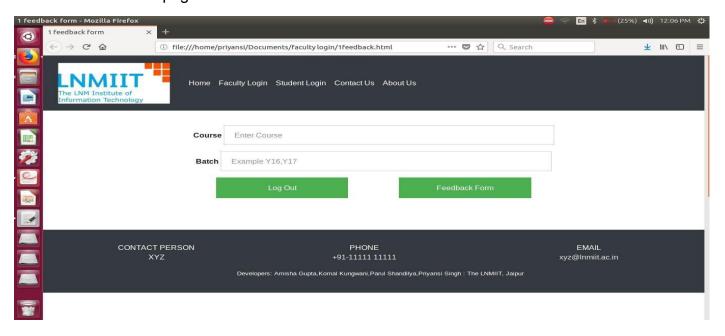




Student Login: This page is the Student Login page which contains username and password text boxes for student validation. If the username and password are correct then the user will be directed to the student options page. If the username or password is incorrect then Invalid username or password statement is displayed.

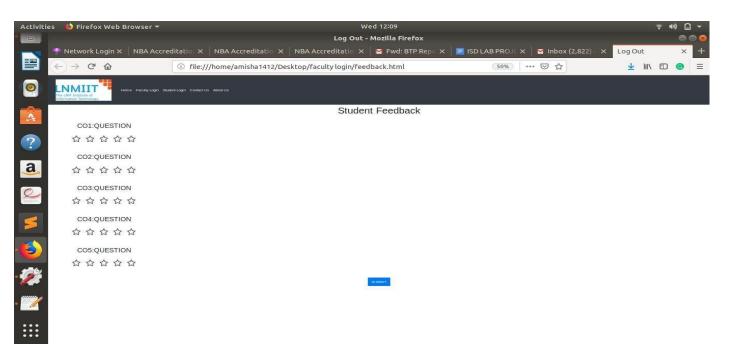


Student Options: This page contains options to fill out course and batch for which feedback is to be filled. It contains two buttons The logout button will take you to the homepage and the feedback form button will take you to the feedback form page.



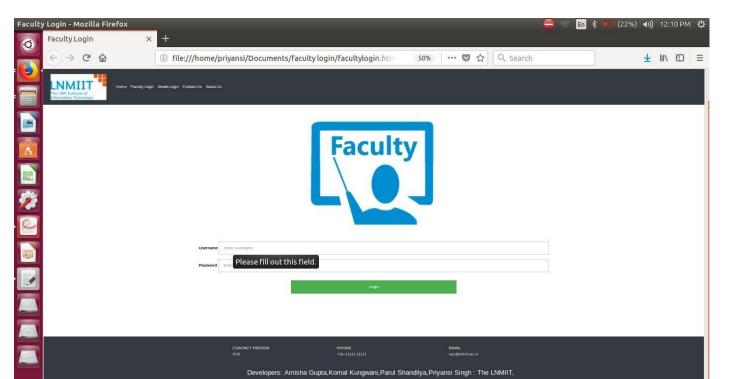


Student Feedback: This form contains the parameter for a student feedback in the form of stars corresponding to each question. The student can fill the form and then click on submit button to give their feedback.



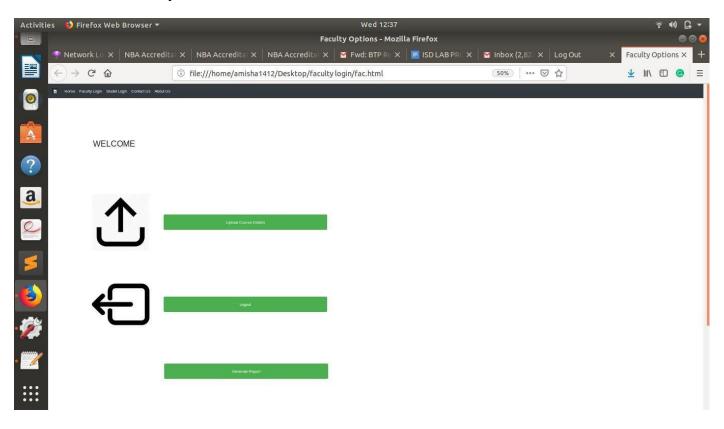
Faculty Login:

This page is the Faculty Login page which contains username and password text boxes for faculty validation. If the username and password are correct then the user will be directed to the faculty options page. If the username or password is incorrect then Invalid username or password statement is displayed.

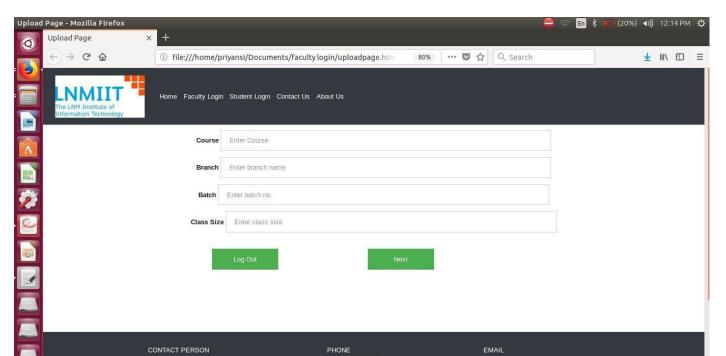




Faculty Options: This page consists of three buttons first to upload various documents like marks, CO/AC etc. Second button is the logout button which will redirect to the home page. The last button is the generate report button which will give us the course attainment for every course and the contribution of every PO for a course.

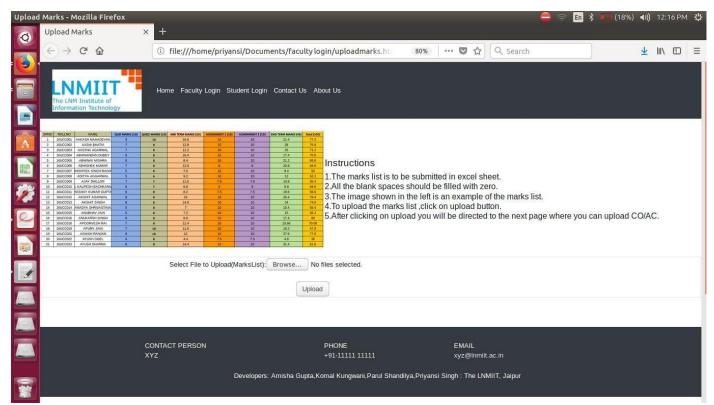


Faculty Upload Options: This page contains the entry for course, branch, batch and class size. The logout button will lead to home page and next button will lead to the Upload pages.

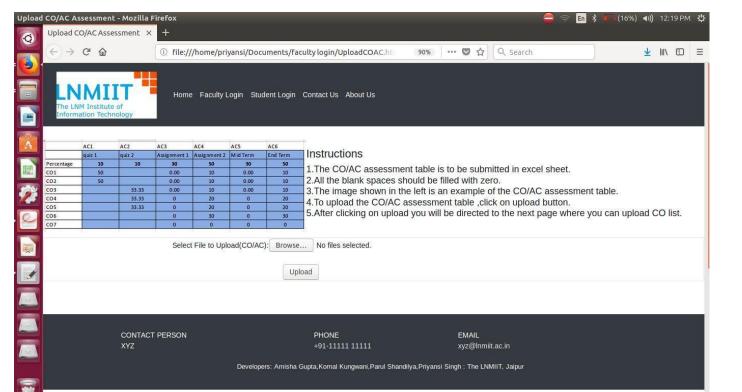




Upload Marks List: Faculty has to upload file in the format as mentioned on the page. There is an example corresponding to marks list. Click on upload button to upload marks list and you will be directed to next page to upload CO/AC.

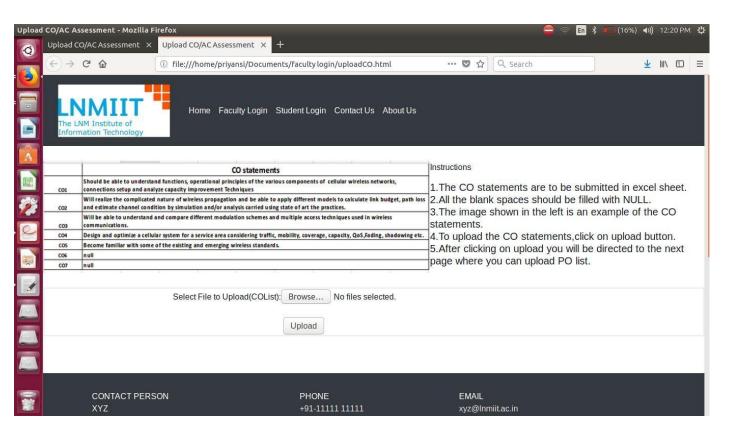


Upload CO/AC details: Faculty has to upload file in the format as mentioned on the page. Click on upload to upload CO/AC and you will be directed to the page which contains CO list upload options.

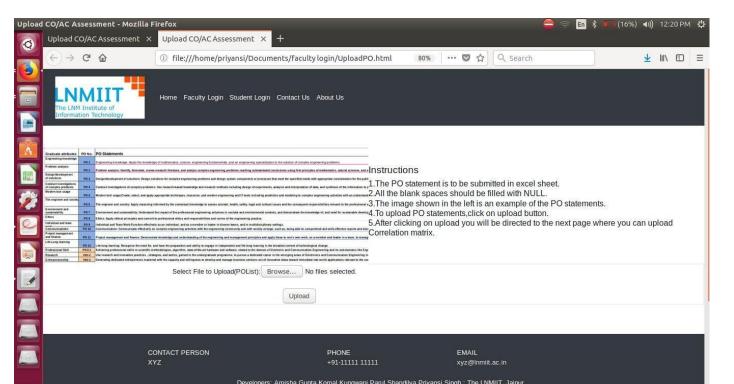




Upload CO List: Faculty has to upload file in the format as mentioned on the page. The next page will lead to PO list upload.



Upload PO List: Faculty has to upload file in the format as mentioned on the page. The next page will lead to correlation matrix upload.





Upload Correlation Matrix: Faculty has to upload file in the format as mentioned on the page.In the last, he has to press the "finish" button in order to finish the uploading process. **1-** represents low correlation, **2-**represents moderate correlation.**3-** represents high correlation.

