AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH
(AIUB)
Faculty of Science and Technology (FST)
Department of Computer Science (CS)
Undergraduate Program

COURSE PLAN

Summer 2021-2022 SEMESTER

I. Course Title

CSC 1205: Object Oriented Programming 1 (JAVA)

II. Credit

3 Credits (2 hrs theory and 3 hrs Lab per week)

III. Nature

Core Course for CSE and CoE.

IV. Prerequisite

CSC 1102: Introduction to Programming,
CSC 1103: Introduction to Programming Lab.

V. Vision:

Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that is in line with the national and global context.

VI. Mission:

The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process.

VII - Course Description:

- Develop classes and describe how to declare a class
- Create Java technology applications that leverage the object-oriented features of the Java language, such as encapsulation, inheritance, polymorphism and abstraction
- Execute Java applications from the command line
- Use Java technology data types and expressions
- Use Java technology flow control constructs
- Use arrays and other data collections
- Use the concept of package
- Implement error-handling techniques using exception handling
- Create an event-driven graphical user interface (GUI) using Swing components: panels, buttons, labels, text fields, and text areas
- Implement input/output (I/O) functionality to read from and write to data and text files and understand advanced I/O streams

VIII – Course outcomes (CO) Matrix:

By the end of this course, students should be able to:

	CO	Level of Domain*				PO Assessed	Assessment Method
		C	P	A	S		
CO1	Develop an application following proper OOP concepts and principles that provides a solution to a real life problem.		6			PO-c-1	Project
CO2	Compose a report with a list of features and a description of classes for an application along with an explanation of the OOP concepts and principles used in that application.		6			PO-c-1	Project Report

C: Cognitive; P: Psychomotor; A: Affective; S: Soft-skills (CT: Critical Thinking, TS: Teamwork)
**The numbers under the 'Level of Domain' columns represent the level of Bloom's Taxonomy each CO corresponds to.*
*** The numbers under the 'PO Assessed' column represents the PO that each CO corresponds to. Following is the list of the PO the will be assessed:*

IX – Topics to be covered in class*:

TOPICS	Specific Objective(s)	Time Frame	Suggested Activities	Teaching Strategy(s)	CO mapped
Introduction to Java Language, Java technology, Java development Environment	Knowing Mission & Vision of AIUB. Understand Java Language, java development platforms and demonstrate the system setup for Java. Develop First Java application.	Week 1	Theory: Lecture LAB: Java Environment Setup, Compilation & Execution, and develop a basic class in java.	Lecture notes, question-answer session.	
Data Types, Type Casting, Class, Object, Constructors, Methods	Knowing different types of variables, their size, value ranges, default value, wrapper classes and casting from one type to another. Understand the concept of Class, Constructors and Objects. Writing methods and calling them, passing values to a method and returning a value from it.	Week 2	Theory: Lecture LAB: Develop simple class to demonstrate data types, type casting, Constructors and methods.	Lecture notes, question-answer session.	CO1

Variable Types, Static Block, String, Array	Learning about different types of variable and the difference between them. Static variables and methods. Familiarizing with different String Operation. Declaring an Array of primitive data type and accessing it	Week 3	Theory: Lecture LAB: Develop simple classes and create arrays.	Lecture notes, question & answer session. Declare Quiz	CO1
OOP Principle: Encapsulation, Using User Defined Package	Get familiarized with the concept of encapsulation, setter-getters, access modifiers and their visibility. Understand user defined packages along with its importance.	Week 4	Theory: Lecture LAB: Develop simple classes to show the visibility of different access modifiers	Lecture notes, question & answer session. Take Quiz	CO1 CO2
OOP Principle: Inheritance	Understand the concept of Inheritance Constructor Chaining The keyword this and super.	Week 5	Theory: Lecture LAB: Develop simple classes to demonstrate inheritance	Lecture notes, question-answer session. Declare Quiz	CO1 CO2
OOP Principle: Inheritance Contd. Association	Single, Multilevel, hierarchical, IS-A relationship, HAS-A relationship.	Week 6	Theory: Lecture LAB: Lab Exam	Lecture notes, question-answer session. Take Quiz	CO1 CO2
Midterm Week Week 7					
OOP Principle: Polymorphism	Understand the concept of Polymorphism Constructor Overloading, Method Overloading, Method Overriding, Polymorphic behavior of Objects The final keyword	Week 8	Theory: Lecture LAB: Develop classes to illustrate method overloading, method overriding and polymorphic behavior of objects.	Lecture notes, question-answer session	CO1 CO2
OOP Principle: Abstraction, Interface	Understand the concept of Interface Learn the importance of Interface	Week 9	Theory: Lecture Lab: write a program using the concepts of interface and abstractions.	Lecture notes, question-answer session Declare Quiz	CO1 CO2

Exception Handling	Differentiate between error and exception. Know about different types of exceptions. Understand the concept of exception handling.	Week 10	Theory: Lecture LAB: Develop classes to show different exception handling approaches	Lecture notes, question-answer session. Take Quiz	CO1 CO2
File I/O	Input/output (I/O) functionality to read from and write data to text files	Week 11	Theory: Lecture LAB: Develop classes to read from a text file and write in another one	Lecture notes, question-answer session. Declare Quiz	CO1 CO2
Introducing Java GUI and different GUI components Java Event handling	Identify and use Java swing libraries, basic classes for developing GUI application. Get familiarized with event handling interfaces in Java.	Week 12-13	Theory: Lecture LAB: Develop simple Java swing applications	Lecture notes, question-answer session. Take Quiz	CO1 CO2
Final term Week Week 14					

* The faculty reserves the right to change, amend, add or delete any of the contents.

X- Course Requirements*

At least **80% class attendance** and attending at least one quiz in each term is necessary to sit for the midterm exam or final term project defense. Make up for quiz might be arranged if proper medical documents are submitted and approved from the head of the department.

If any assignment is given, the students have to submit it before the deadline. Late submission of assignments might be accepted in emergency cases with some deduction of marks.

* The faculty reserves the right to change, amend, add or delete any of the requirements.

XI – Evaluation & Grading System

The following table shows the evaluation criteria for this course:

Marking System for Mid Term		Marking System for Final Term	
Attendance	10	Attendance	10
Quiz 1 out of 2	20	Quiz 1 out of 2	20
Laboratory Performance/Assignment	20	Laboratory Performance/Assignment	20
Midterm Written Exam	50	Project	50
Total	**100**	**Total**	**100**
Grand Total: Mid Term + Final Term			

The following table is a reference to AIUB Grading Policy:

Letter	Grade Point	Numerical %
A+	4.00	90 - 100
A	3.75	85 - < 90
B+	3.50	80 - < 85
B	3.25	75 - < 80
C+	3.00	70 - < 75
C	2.75	65 - < 70
D+	2.50	60 - < 65
D	2.25	50 - < 60
F	0.00	< 50 (Fail)

XII – Teaching Methods

Majority of the topics will be covered from the textbook. For the rest of the topics, reference books will be followed. Lectures notes will be uploaded in the VUES course page. White board will be used with multimedia projector for the convenience of the students.

XIII – Textbook/ References

1. Java Complete Reference, 7th Edition, By Herbert Schildt.
2. A Programmer's Guide to Java SE 8 Oracle Certified Associate, Khalid A. Mughal Rolf W. Rasmussen
3. Java How to Program Java, 9th Edition, By Deitel and Deitel.
4. The Java Language Specification, By J. Gosling, B. Joy, G. Steele, G.Bracha and A. Buckley
5. Head First Java, By Kathy Sierra and Bert Bates
6. The Java Tutorials. http://docs.oracle.com/javase/tutorial/

XIV - List of Faculties Teaching the Course

1. MD. NAZMUL HOSSAIN
2. RIFATH MAHMUD
3. SAZZAD HOSSAIN
4. SIFAT RAHMAN AHONA
5. ZAHIDUDDIN AHMED
6. ANJIR AHMED CHOWDHURY
7. ARGHO DAS
8. KAWSER IROM RUSHEE
9. MAZID-UL-HAQUE
10. MD. SAJID BIN FAISAL
11. MIR MD KAWSUR

XV – Verification:

Prepared by : --- **MD.NAZMUL HOSSAIN** *Course Convener* Date:.....	**Moderated by :** --- **Dr. M.M. Mahbubul Syeed** *Point Of Contact* *OBE Implementation Committee for CS* Date:.....	
Checked by: ..... **Dr. Mahbub Chowdhury** *Head,* *Department of Computer Science* Date:.....	**Certified by:** ..... **Dr. Dip Nandi** *Director,* *Faculty of Science & Information Technology* Date:.....	**Approved by:** ..... **Mr. Mashiour Rahman** *Associate Dean,* *Faculty of Science & Information Technology* Date:.....

APPENDIX

Table 1: Knowledge Profile (WK / K)		
Curriculum		
Indicator		**Attribute**
K1	Theory based natural science	A systematic, theory-based understanding of the natural sciences applicable to the discipline
K2	Conceptual based mathematics	Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer and information science to support analysis and modeling applicable to the discipline
K3	Theory based engineering fundamentals	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline
K4	Forefront specialist knowledge for practice	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline
K5	Engineering Design	Knowledge that supports engineering design in a practice area
K6	Engineering Practice (Technology)	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline
K7	Comprehension of engineering in society	Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability
K8	Research Literature	Engagement with selected knowledge in the research literature of the discipline

Table 2: Range of Complex Engineering Problem Solving (WP / P)		
Complex Engineering Problems have characteristic P1 and some or all of P2 to P7		
Indicator	**Title**	**Description**
P1	Depth of knowledge required	Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach
P2	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues
P3	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
P4	Familiarity of issues	Involve infrequently encountered issues
P5	Extent of applicable codes	Are outside problems encompassed by standards and codes of practice for professional engineering
P6	Extent of stakeholder involvement and conflicting requirements	Involve diverse groups of stakeholders with widely varying needs
P7	Interdependence	Are high level problems including many component parts or sub-problems

Table 3: Range of Complex Engineering Activities (A)		
Complex activities means (engineering) activities or projects that have some or all of the following characteristics		
Indicator	**Title**	**Description**
A1	Range of resources	Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies)
A2	Level of interaction	Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues
A3	Innovation	Involve creative use of engineering principles and research-based knowledge in novel ways
A4	Consequences for society and the environment	Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation
A5	Familiarity	Can extend beyond previous experiences by applying principles-based approaches

Mapping of PO / PLOs to CS Courses and K, P, A

PO-a: Engineering Knowledge
Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in K1 to K4 respectively to the solution of complex engineering problems

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-a-1	Apply information and concepts in natural science with the familiarity of issues.	Cognitive Level 3 (Applying)	CSC 4125 Computer Science Mathematics	CSC 1101 Introduction to Computer Studies		K1 Theory based natural science	P1	
PO-a-2	Apply information and concepts of mathematics with the familiarity of issues.	Cognitive Level 3 (Applying)	CSC 2211: Algorithms	CSC 1204: Discrete Mathematics	CSC 4233 Natural Language Processing	K2 Conceptual based mathematics	P1	
PO-a-3	Apply information and concepts in engineering fundamentals to solve complex engineering problems with a range of conflicting requirements.	Cognitive Level 3 (Applying)	CSC 3113: Theory of Computation	CSC 4232 Machine Learning		K3 Theory based engineering fundamentals	P1, P2, P3	
PO-a-4	Apply information and concepts in specialized engineering sciences with the in-depth of analysis of a complex engineering problem.	Cognitive Level 3 (Applying)	CSC 3220: Compiler Design	CSC 4231 Parallel Computing	CSC 4251 Image Processing	K4 Forefront specialist knowledge for practice	P1, P2, P3	

PO-b: Problem Analysis
Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (K1 to K4).

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-b-1	Identify first principles of natural sciences and engineering sciences in practical applications.	Cognitive Level 2 (Understanding)	CSC 4230 Bioinformatics	CSC 1204: Discrete Mathematics		K1 Theory based natural science	P1	
PO-b-2	Formulate solutions, procedures, and methods using first principles of mathematics for engineering sciences.	Cognitive Level 4 (Analyzing)	CSC 2105: Data Structure	CSC 4126 Basic Graph Theory	CSC 4233 Natural Language Processing	K2 Conceptual based mathematics	P1	
PO-b-3	Analyze solutions for complex engineering problem reaching substantiated conclusion.	Cognitive Level 5 (Evaluating)	CSC 3214 Operating Systems	CSC 4128 Linear Programming	CSC 4127 Advanced Algorithm Techniques	K3 Theory based engineering fundamentals	P1, P3	
PO-b-4	Research literature of engineering science and analyze the validity and accuracy of existing solution for complex engineering problems.	Cognitive Level 4 (Analysis)	CSC 2209 Object Oriented Analysis and Design	CSC 3214 Operating Systems		K4 Forefront specialist knowledge for practice	P1, P3, P7	

PO-c: Design/ development of solutions
Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (K5).

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-c-1	Design solutions for a complex engineering problem considering public health and safety.	Psychomotor Level 6 (Create)	CSC 3215 Web Technologies	CSC 4264 Advanced Programming with .NET	CSC 1205 Object Oriented Programming 1	K5 Engineering Design	P1, P3, P5, P6	A3, A4
PO-c-2	Develop system or components that meets specific needs considering health, safety and environment.	Psychomotor Level 6 (Create)	CSC 4262 Programming in Python	CSC 4263 Advanced Programming with JAVA	CSC 3215 Web Technologies	K5 Engineering Design	P1, P3, P7	A3, A4

PO-d: Investigation
Conduct investigations of complex problems using research-based knowledge (K8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-d-1	Conduct investigations of complex problems using research-based knowledge	Cognitive Level 5 (Evaluating)	CSC 4180 Introduction to Data Science	CSC 4298 Thesis/Project	CSC 4285 Data Warehouse and Data Mining	K8 Research Literature	P1, P2, P3, P4, P7	
PO-d-2	Use appropriate research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.	Psychomotor Level 6 (Create)	CSC 4180 Introduction to Data Science	CSC 4298 Thesis/Project	CSC 4285 Data Warehouse and Data Mining	K8 Research Literature	P1, P4, P5, P6	A2, A3

PO-e: Modern Tool Usage
Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (K6).

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-e-1	Select and apply appropriate techniques, tools and resources (e.g., prediction & modeling) to solve complex engineering problems considering their limitations.	Cognitive Level 3 (Applying)	CSC 2210 Object Oriented Programming 2	CSC 2107: Introduction to Database	CSC 4271 Software Quality and Testing	K6 Engineering Practice (Technology)	P1, P4	A1, A2, A3
PO-e-2	Create appropriate techniques, tools or resources (e.g., prediction & modeling) to solve complex engineering problems considering their limitations.	Psychomotor Level 6 (Create)	CSC 2209: Object Oriented Analysis and Design	CSC 2210 Object Oriented Programming 2	CSC 4272 Mobile Application Development	K6 Engineering Practice (Technology)	P1, P4, P7	A1, A2, A3

PO-f: The Engineer and Society
Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems (K7)

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-f-1	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues in relation to professional engineering practice and solution.	Cognitive Level 5 (Evaluate)	CSC4226: Artificial Intelligence and Expert System	CSC 3114: Software Engineering		K7 Comprehension of engineering in society	P1, P4, P5	
PO-f-2	Assess the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems.	Cognitive Level 4 (Analyze)	CSC4226: Artificial Intelligence and Expert System	CSC 3114: Software Engineering		K7 Comprehension of engineering in society	P1, P6	

PO-g: Environment and Sustainability
Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (K7)

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-g-1	Understand the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.	Cognitive Level 5 (Evaluate)	CSC 4273 Software Architecture & Design Patterns	CSC 4118 Computer Graphics		K7 Comprehension of engineering in society	P1, P3, P4	
PO-g-2	Evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.	Cognitive Level 5 (Evaluate)	CSC 3216 Compiler Design	CSC 4251 Image Processing	CSC 4270 Software Development Project Management	K7 Comprehension of engineering in society	P1, P5, P7	

PO-h: Ethics
Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (K7)

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-h-1	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	Psychomotor Level 3 (Apply)	CSC 4195: Research Methodology	CSC 4183 Cyber Laws & Information Security		K7 Comprehension of engineering in society		

PO-i: Individual and Team work
Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-i-1	Function effectively as an individual in diverse teams and in multi-disciplinary settings.	Affective Level 5 (Evaluate)	CSC 4298 Thesis/Project	CSC 1102 Introduction to Programming Language	CSC 4254 Computer Vision & Pattern Recognition	X		

PO-i-2	Function effectively as a member or leader in diverse teams and in multi-disciplinary settings.	Affective Level 5 (Evaluate)	CSC 4298 Thesis/Project	CSC 1102 Introduction to Programming Language	CSC 4254 Computer Vision & Pattern Recognition	X		

PO-j: 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 design documentation, make effective presentations, and give and receive clear instructions

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-j-1	Comprehend and write effective reports and design documentation for effective communication on complex engineering activities.	Psychomotor Level 5 (Evaluate)	CSC 4195: Research Methodology	CSC 2210 Object Oriented Programming 2		X	P1, P2, P3	A1, A3, A5
PO-j-2	Make effective presentations to exchange clear instructions with engineering community and the society at large.	Psychomotor Level 6 (Create)	CSC 4299 Internship	CSC 4298 Thesis/Project		X		A1, A4

PO-k: Project Management and Finance
Demonstrate knowledge and understanding of engineering management principles and economic decision making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-k-1	Apply engineering management principles and economic decision to manage project as a team member / team leader.	Psychomotor Level 3 (Apply)	CSC 4298 Thesis/Project	CSC 4261 Advanced Programming in Web Technologies	CSC 4160 Software Requirement Engineering	X		A2, A3, A5
PO-k-2	Apply engineering management principles and economic decision to manage project in multidisciplinary environments.	Psychomotor Level 3 (Apply)	CSC 4298 Thesis/Project	CSC 4181 Advance Database Management Systems	CSC 4251 Image Processing	X		A2, A3, A5

PO-l: Lifelong 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.

PO Indicator ID	PO Indicators Definition (As per the requirement of WKs)	Domain	Course 1	Course 2	Course 3	K	P	A
PO-l-1	Identify the need and prepare accordingly for independent learning in solving complex engineering problems and change of technologies.	Affective Level 5 (Evaluate)	CSC 4298 Thesis/Project	CSC 4160 Software Requirement Engineering		X		A1, A2, A3
PO-l-2	Demonstrate the ability to engage in independent and life-long learning in the broadest context of technological change.	Psychomotor Level 6 (Create)	CSC 4299 Internship	CSC 4182 Human Computer Interaction		X		A1, A3, A5

Mapping of CO Assessment Method and Rubric

The mapping between Course Outcome(s) (COs) and The Selected Assessment method(s) and the mapping between Assessment method(s) and Evaluation Rubric(s) is shown below:

CO	Description	Learning Domain	Assessment Method	Assessment Rubric
CO1	Develop an application following proper OOP concepts and principles that provides a solution to a real life problem.	Psychomotor	Project	Rubric for Project
CO2	Compose a report with a list of features and a description of classes for an application along with an explanation of the OOP concepts and principles used in that application.	Psychomotor	Project Report	Rubric for Report

Rubric for Project (CO1)

Evaluation Criteria:

Category	Evaluation Definition
OOP Principles	Does the project follow OOP Principles?
Logical Operations	Did the student implemented the logical operations properly?
Exception Handling	Did the student implemented proper exception handling mechanism?
File Operations	Did the student implemented File Operations properly?
Completeness	Is the Project complete?

Assessment Criteria:

Category	Assessment Criteria				
	Not Attended (0)	Inadequate (1)	Satisfactory (2)	Good (3)	Excellent (4)
OOP Principles	Student did not attend or the project does not follow any OOP Principles.	The project follows at least one of the OOP principles.	The project follows at least two of the OOP principles.	The project follows at least three of the OOP principles.	The project follows all of the OOP principles.
Logical Operations	Student did not attend or the project does not have any logical operations.	The project only has basic arithmetic operations.	The project has some complex arithmetic operations.	The project has basic array operations and complex arithmetic operations.	The project has complex array and arithmetic operations.
Exception Handling	Student did not attend or the project does not have any exception handling.	The project can handle at least one kind of exception.	The project can handle at least two kinds of exceptions.	The project can handle at least four kinds of exceptions.	The project can handle at least six kinds of exceptions.
File Operations	Student did not attend or the project does not have any file operations.	Student could create files but could not perform any operations	Student could only implement one of the Read or Write operation.	Both read and write operations were implemented but only one works.	Both read write operations work properly.
Completeness	Student did not attend or the project is not complete at any level.	A small part of the project is completed.	The project is half complete.	Most of the parts of the project is complete.	The project is fully completed.

Rubric for Project Report Assessment (CO2)

Evaluation Criteria:

Category	Evaluation Definition
Objective	How does this project help the society with a solution of a real life problem?
List of features	What are the features of this project?
Description of classes	Does the description of classes illustrates the system requirements properly?
OOP Concept Analysis	Which OOP concepts were used in the project and why?
Limitations	What are the limitations of the project and how it can be improved?

Assessment Criteria:

Category	Assessment Criteria		
	Not Attended (0)	Moderate (1)	Excellent (2)
Objective	Student did not attend or did not mention any objective of this project.	Student could not mention the objective of this project properly.	Student mentioned the objective of this project properly.
List of features	Student did not attend or did not mention any feature list.	Student did not mention the feature list properly.	Student mentioned the feature list properly.
Description of classes	Student did not attend or did not describe any classes.	Student did not describe the classes properly.	Student described the classes properly.
OOP Concepts	Student did not attend or did not provide any description of OOP concepts.	Student did not explain the OOP concepts properly.	Student explained the OOP concepts properly.
Limitations	Student did not attend or did not mention any limitations or did not suggest any possible improvements.	Student did not provide the limitations properly or did not suggest any possible improvements properly.	Student provided the limitations and suggestions for possible improvements properly.