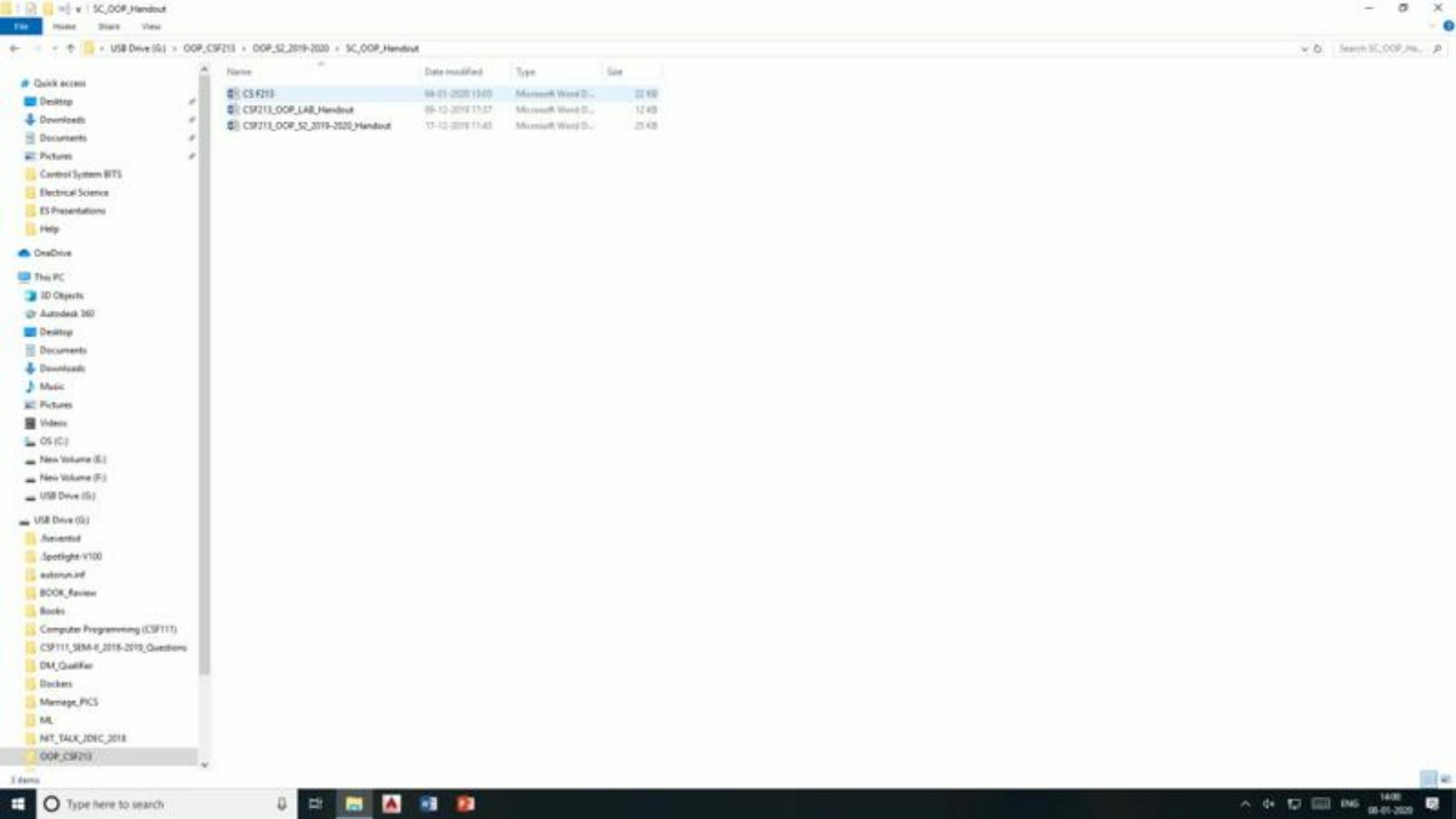
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BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI-HYDERABAD CAMPUS
INSTRUCTION DIVISION, SECOND SEMESTER 2019-20
COURSE HANDOUT (PART II)

Date: 17/12/2019

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : CS F213
Course Title : Object-Oriented Programming

Date: 17/12/2019

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : CS F213
Course Title : Object-Oriented Programming
Instructor-In-Charge : Dr. S. Panda
Instructor : Mr.Surendar Singh Samanth

1. Scope of the course:

The scope of this course includes basics of Object-Oriented Concepts; Fundamentals of Object model: Essential features of Object model; Classes and Objects; Operations/Methods and Messages; Abstraction mechanism; Inheritance; Polymorphism; Multithreading; Exception handling; I/O; Event handling; Object serialization; Process of Object Oriented Design; Design Patterns; Brief introduction to other Object Oriented Applications (other than Java). Important point to be noted is that the important Object Oriented

2. Course objectives:

- Provide the student with an understanding of the need for Object Oriented Paradigm.
- To gain knowledge on important features of Object Orientation with the help of Java (through hands-on lab experience).
- To gain basic knowledge on Object Oriented Design methodology, and notations in modeling.
- To get a rough idea about Object Oriented Design Patterns.

3. Text Book:

T1: Object Oriented Design and patterns, Cay Hortsmann, Wiley, 2004.

4. Reference Books:

R1. The Complete Reference- Java, 7th Edition, Herbert Schildt, Tata McGraw Hill Publishing.

R2. Object Oriented Analysis and Design with Applications, Grady Booch, Addison Wesley, 2nd Edition.

R3. The Unified Modeling Language User Guide, the ultimate tutorial to the UML from the Original Designers, G Booch, J Rumbaugh, I Jacobson, Pearson Education, 2006.

	Orientated Programming Paradigm	Concepts and Principles	notes
3- 6	To learn the fundamentals of Object model in terms of classes and methods	Object Model	T1.Ch.2 ; R2- Ch.2
		Classes and Objects	T1.Ch.2&3; R1-Ch.6,7; R2-Ch.3
		Classification and Abstraction mechanism , Encapsulation and Data hiding	T1.Ch.2; R2- Ch.4; T1-Ch.3; R1.ch.2; and Class notes
		Methods and Messages	T1.Ch.3; R1-Ch.6,7 ; R2-Ch.3; and Class notes
7-8	To understand the basics of class hierarchies in Object Orientation	Inheritance and Polymorphism	T1 –Ch.6; R1.Ch.7&8
9-11	To understand the use of Selection Statements	If statements, Nested if statements, Boolean expressions and variables, comparing objects, switch statements	R1-Ch.5
12-14	To understand the use of Repetition Statements	While statement, do-while statement, for and nested for statements, estimating the execution time, recursive methods (optional)	R1-Ch.5
15-17	To learn Java Exception handling	Catching exceptions, throwing	T1.Ch.1.8; R1-Ch.10, Class

		Data hiding	
		Methods and Messages	T1.Ch.3; R1-Ch.6,7 ; R2-Ch.3; and Class notes
7-8	To understand the basics of class hierarchies in Object Orientation	Inheritance and Polymorphism	T1 –Ch.6; R1.Ch.7&8
9-11	To understand the use of Selection Statements	If statements, Nested if statements, Boolean expressions and variables, comparing objects, switch statements	R1-Ch.5
12-14	To understand the use of Repetition Statements	While statement, do-while statement, for and nested for statements, estimating the execution time, recursive methods (optional)	R1-Ch.5
15-17	To learn Java Exception handling mechanism and assertions	Catching exceptions, throwing exceptions and multiple catch blocks, propagating exceptions, Types of exceptions, programmer-defined exceptions, Assertions.	T1.Ch.1.8; R1-Ch.10, Class Notes
18-20	To understand and apply characters and string concepts for	Characters, strings, comparing strings, string Buffer and string	R1- Ch.13, Ch.24

		Types of exceptions, programmer-defined exceptions, Assertions.	
18-20	To understand and apply characters and string concepts for problem solving	Characters, strings, comparing strings, string Buffer and string Builder, Pattern matching and regular expressions.	R1- Ch.13, Ch.24
21-24	To understand and apply array and collection framework classes for problem solving	Array basics, array of objects, for-each loop, passing arrays to methods, 2D-arrays, Lists and Maps	R1-Ch.3, Ch.15
25-28	To understand and apply sorting and searching mechanisms	Searching methods, sorting methods, Heap sort	Class Notes
29-32	To create GUI programming	Applet Fundamentals, and AWT	R1-Ch. 12, Ch.20, Ch.21
33-35	To understand multithreading concepts and apply it through Java programming and work with IO streams in Java	Multithreading and Synchronization concepts	T1 –Ch.9; R1- Ch.11; and class notes
		I/O Streams	R1- Ch.13 and Ch.19
		Object Serialization	T1.Ch.7.5; R2- Ch.19
36-37	Introducing students to Object Oriented Analysis and Design activity in the context of UML	Process of Object Oriented Design	T1- Ch.2&3; R2-Ch. 2-5; R3 for notations; and Class notes
38-39		Object Oriented Design Patterns	T1- Ch.5&11

	problem solving	methods, 2D-arrays, Lists and Maps	
25-28	To understand and apply sorting and searching mechanisms	Searching methods, sorting methods, Heap sort	Class Notes
29-32	To create GUI programming	Applet Fundamentals, and AWT	R1-Ch. 12, Ch.20, Ch.21
33-35	To understand multithreading concepts and apply it through Java programming and work with IO streams in Java	Multithreading and Synchronization concepts	T1 –Ch.9; R1- Ch.11; and clas notes
		I/O Streams	R1- Ch.13 and Ch.19
		Object Serialization	T1.Ch.7.5; R2- Ch.19
36-37	Introducing students to Object Oriented Analysis and Design activity in the context of UML	Process of Object Oriented Design	T1- Ch.2&3; R2-Ch. 2-5; R3 for notations; and Class notes
38-39		Object Oriented Design Patterns	T1- Ch.5&11
40-42	To learn Python	Introduction to Python Programming	Class notes

	and searching mechanisms	methods, Heap sort	
29-32	To create GUI programming	Applet Fundamentals, and AWT	R1-Ch. 12, Ch.20, Ch.21
33-35	To understand multithreading concepts and apply it through Java programming and work with IO streams in Java	Multithreading and Synchronization concepts	T1 –Ch.9; R1- Ch.11; and clas notes
		I/O Streams	R1- Ch.13 and Ch.19
		Object Serialization	T1.Ch.7.5; R2- Ch.19
36-37	Introducing students to Object Oriented Analysis and Design activity in the context of UML	Process of Object Oriented Design	T1- Ch.2&3; R2-Ch. 2-5; R3 for notations; and Class notes
38-39		Object Oriented Design Patterns	T1- Ch.5&11
40-42	To learn Python	Introduction to Python Programming	Class notes

	programming and work with IO streams in Java	I/O Streams	R1- Ch.13 and Ch.19
		Object Serialization	T1.Ch.7.5; R2- Ch.19
36-37	Introducing students to Object Oriented Analysis and Design activity in the context of UML	Process of Object Oriented Design	T1- Ch.2&3; R2-Ch. 2-5; R3 for notations; and Class notes
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5. Evaluation

Component	Mode	Date & Time	Weightage

5. Evaluation

Component	Mode	Date & Time	Weightage
Mid-Semester	Closed Book		20%
Quiz (Surprise quiz tests during Lectures)	Open Book		10%
LAB: 1.Lab Exam (LE)	Open Book	**Lab Exam: 26-04-2020, 9.00AM-2.00PM**	15%
2. Continuous LAB Evaluation (CLE)			10%
3. Mini-Project			5%
Comprehensive	Closed Book	13/05 AN	40%

6. Make-up Policy

For genuine reasons other than medical, prior approval from the IC is mandatory. Requests coming after the test will not be honored. For make-up on medical grounds, first inform the warden about the illness and take

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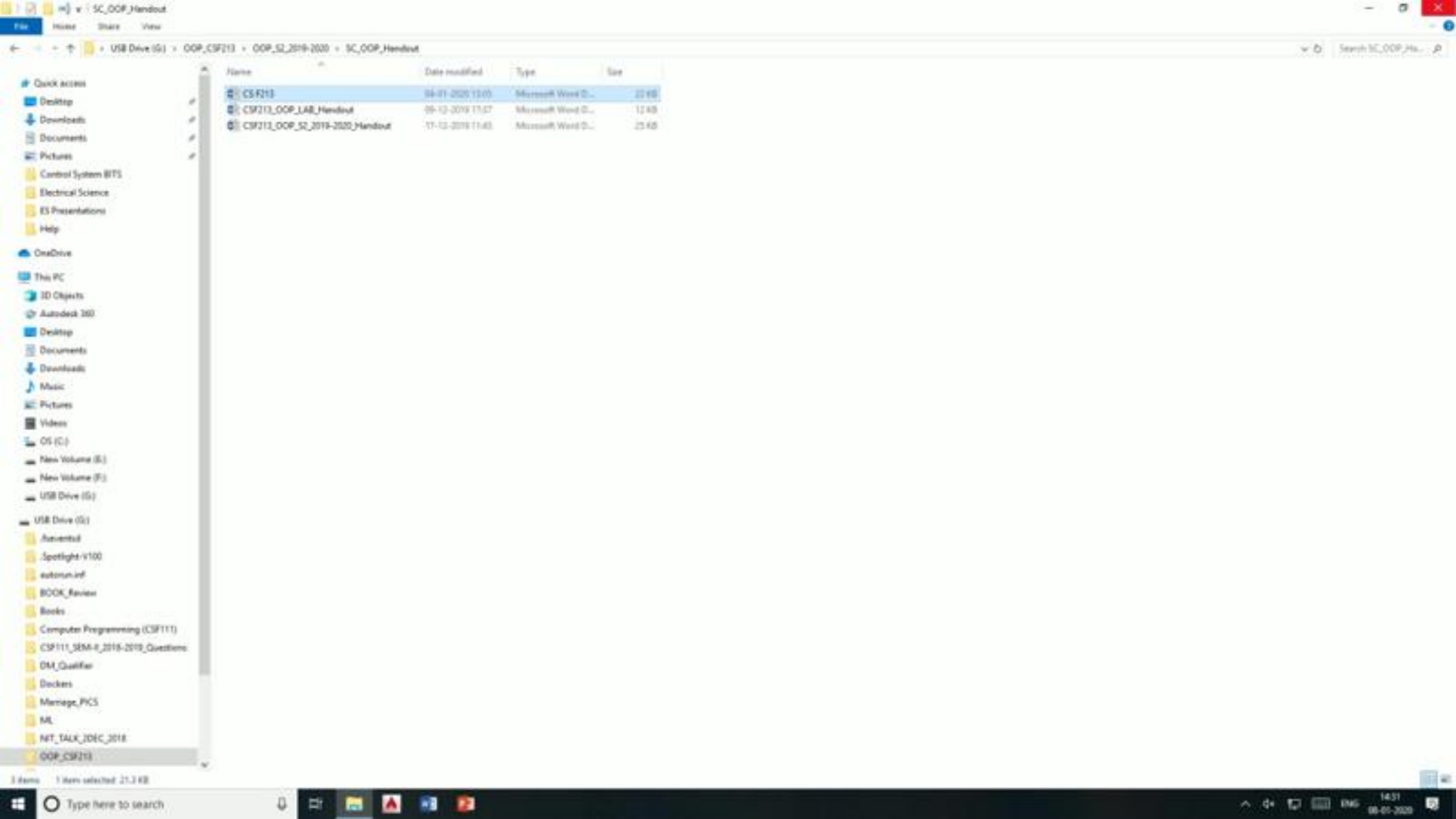
Comprehensive	Closed Book	13/05 AN	40%

6. Make-up Policy

For genuine reasons other than medical, prior approval from the IC is mandatory. Requests coming after the test will not be honored. For make-up on medical grounds, first inform the warden about the illness and take his help for consulting the doctor, and finally Chief Hostel Warden's recommendation is a must and such students should not leave the campus during Test dates (please refer to the guidelines by ID in this regard). ***No make-up will be given by just producing some medical prescription.*** The above mentioned rules will be-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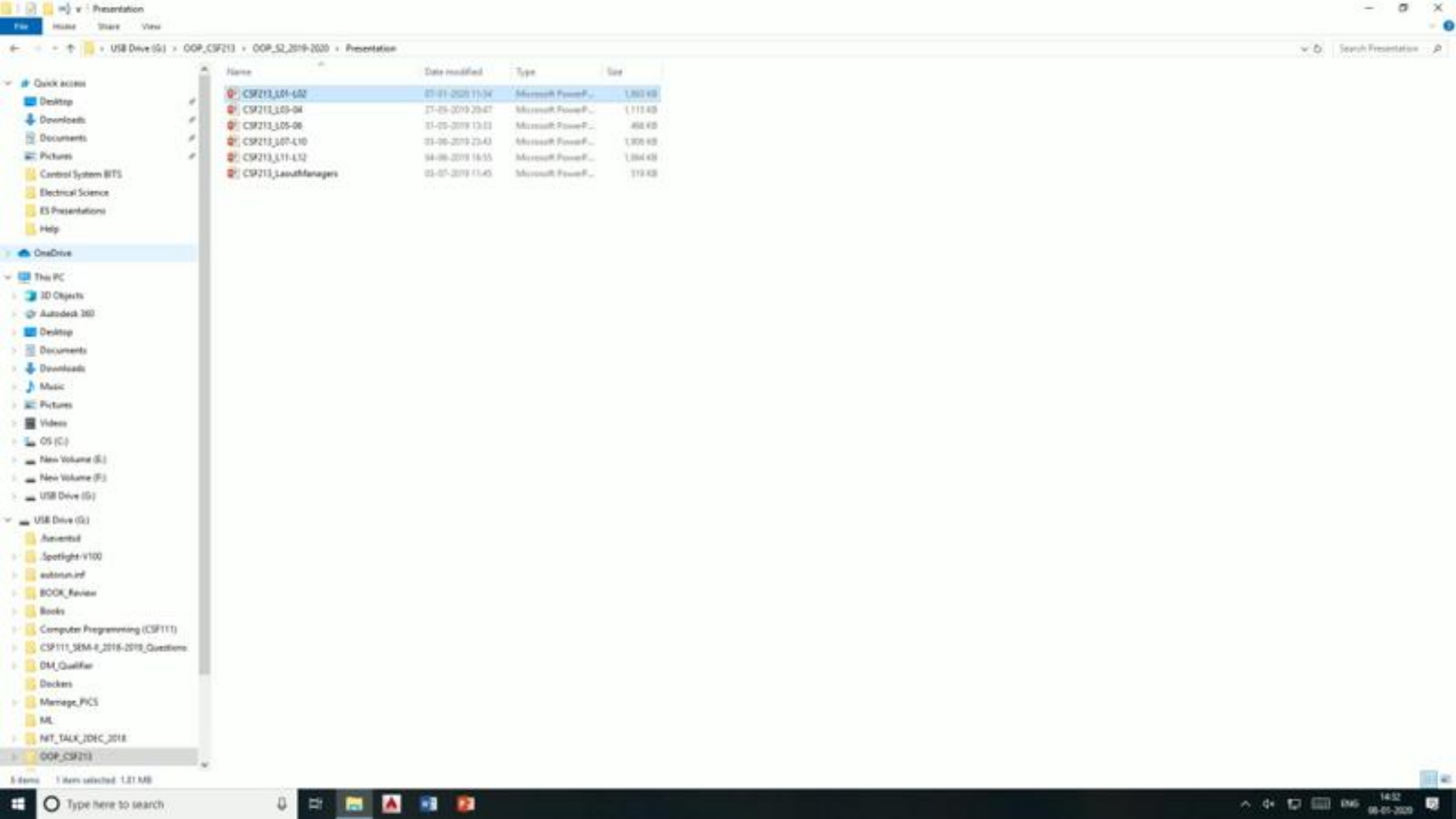
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Top Programming Languages

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IEEE Spectrum | Trending | Jobs | Open | Custom

Web | Enterprise | Mobile | Embedded

Create custom ranking

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Language Ranking: IEEE Spectrum

Rank	Language	Type	Score
1	Python	Web, Enterprise, Embedded	100.0
2	Java	Web, Mobile, Enterprise	96.3
3	C	Mobile, Enterprise, Embedded	94.4
4	C++	Mobile, Enterprise, Embedded	87.5
5	R	Enterprise	81.5
6	JavaScript	Web	79.4
7	C#	Web, Mobile, Enterprise, Embedded	74.5
8	Matlab	Enterprise	70.6
9	Swift	Mobile, Enterprise	69.1
10	Go	Web, Enterprise	68.0

Choose a Ranking (choose a weighting or make your own)

IEEE Spectrum | Trending | Jobs | Open | Custom

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Language Types (click to hide)

Web | Mobile | Enterprise | Embedded

Language Rank	Types	Spectrum Ranking
1. Python	Web, Enterprise, Embedded	100.0
2. C++	Mobile, Enterprise, Embedded	99.7
3. Java	Web, Mobile, Enterprise	97.5
4. C	Mobile, Enterprise, Embedded	96.7
5. C#	Web, Mobile, Enterprise	89.4
6. PHP	Web	84.9
7. R	Enterprise	82.9
8. JavaScript	Web, Mobile	82.6
9. Go	Web, Enterprise	76.4
10. Assembly	Embedded	74.1

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Language Ranking: Trending

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1	Python	Web, Enterprise, Embedded	100.0
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5	JavaScript	Web	74.9
6	C#	Web, Mobile, Enterprise, Embedded	74.1
7	Go	Web, Enterprise	69.3
8	R	Enterprise	68.8
9	Ruby	Web, Enterprise	67.1
10	Dart	Web, Mobile	67.1

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Language Types (click to hide)

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1. Python	Web, Enterprise, Embedded	100.0
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4. C	Mobile, Enterprise, Embedded	93.7
5. Go	Web, Enterprise	85.5
6. JavaScript	Web, Mobile	80.8
7. PHP	Web	79.9
8. Scala	Web, Mobile	78.6
9. Ruby	Web, Enterprise	77.2
10. HTML	Web	75.5

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2	Java	Web, Mobile, Enterprise	97.5
3	C	Mobile, Enterprise, Embedded	96.0
4	C++	Mobile, Enterprise, Embedded	85.7
5	JavaScript	Web	83.1
6	C#	Web, Mobile, Enterprise, Embedded	77.2
7	HTML,CSS	Web	75.6
8	Swift	Mobile, Enterprise	69.4
9	Matlab	Enterprise	69.4
10	SQL	Enterprise	69.3

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Language Types (click to hide)

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7	R	Enterprise	74.2
8	HTML,CSS	Web	73.2
9	Swift	Mobile, Enterprise	71.9
10	Dart	Web, Mobile	70.6

Choose a Ranking (choose a weighting or make your own)

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Language Types (click to hide)

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1. Python	Web, Enterprise, Embedded	100.0
2. C++	Mobile, Enterprise, Embedded	96.1
3. Java	Web, Mobile, Enterprise	95.7
4. C	Mobile, Enterprise, Embedded	90.3
5. C#	Web, Mobile, Enterprise	89.5
6. HTML	Web	88.7
7. JavaScript	Web, Mobile	88.2
8. PHP	Web	88.2
9. Go	Web, Enterprise	81.8
10. Shell	Enterprise	80.3

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10. Go	Web, Enterprise	74.8

Organization

- Programs vs. Software Products
- What to Engineer a Software ?
- Evolution of Software Engineering
- Notable Changes In Software Development Practices
- Introduction to Life Cycle Models

Examples

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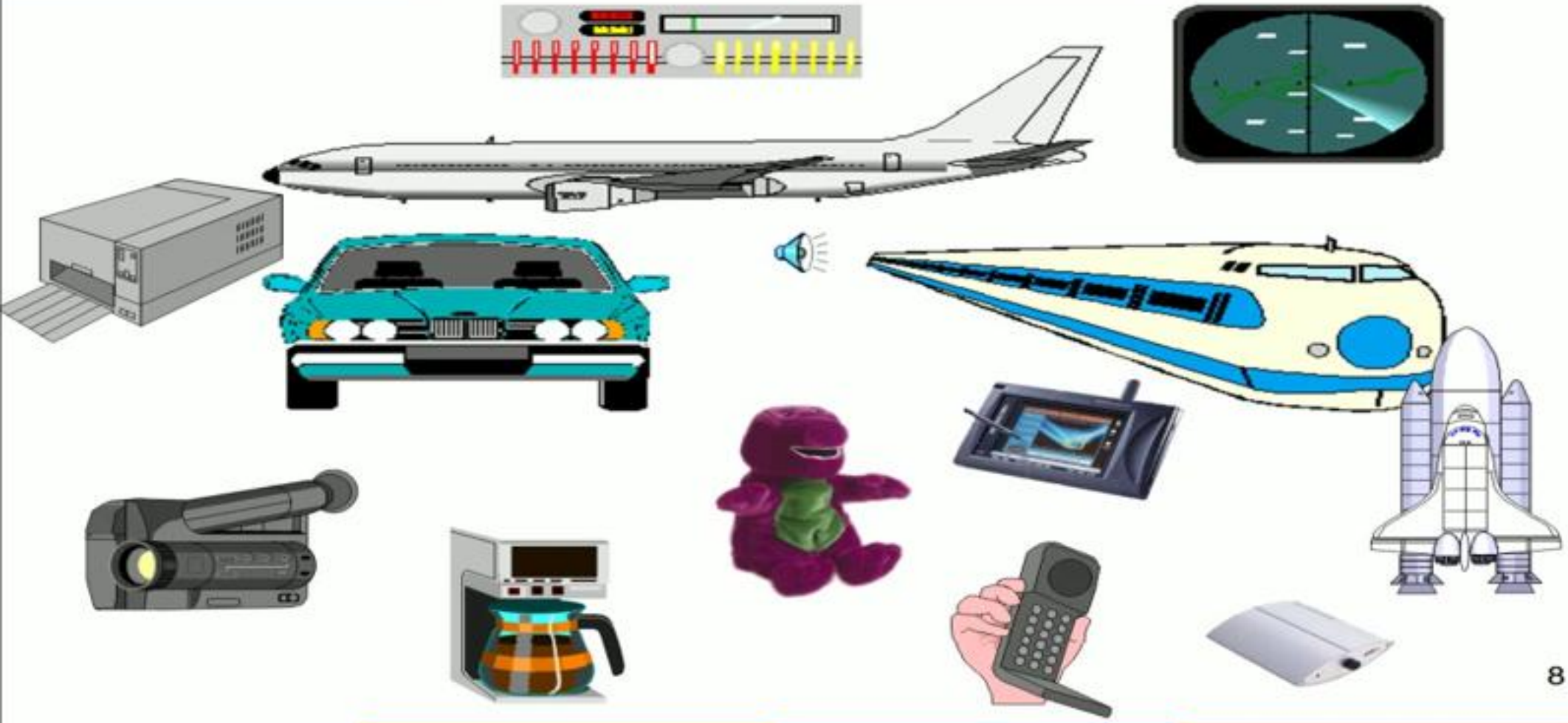
Examples

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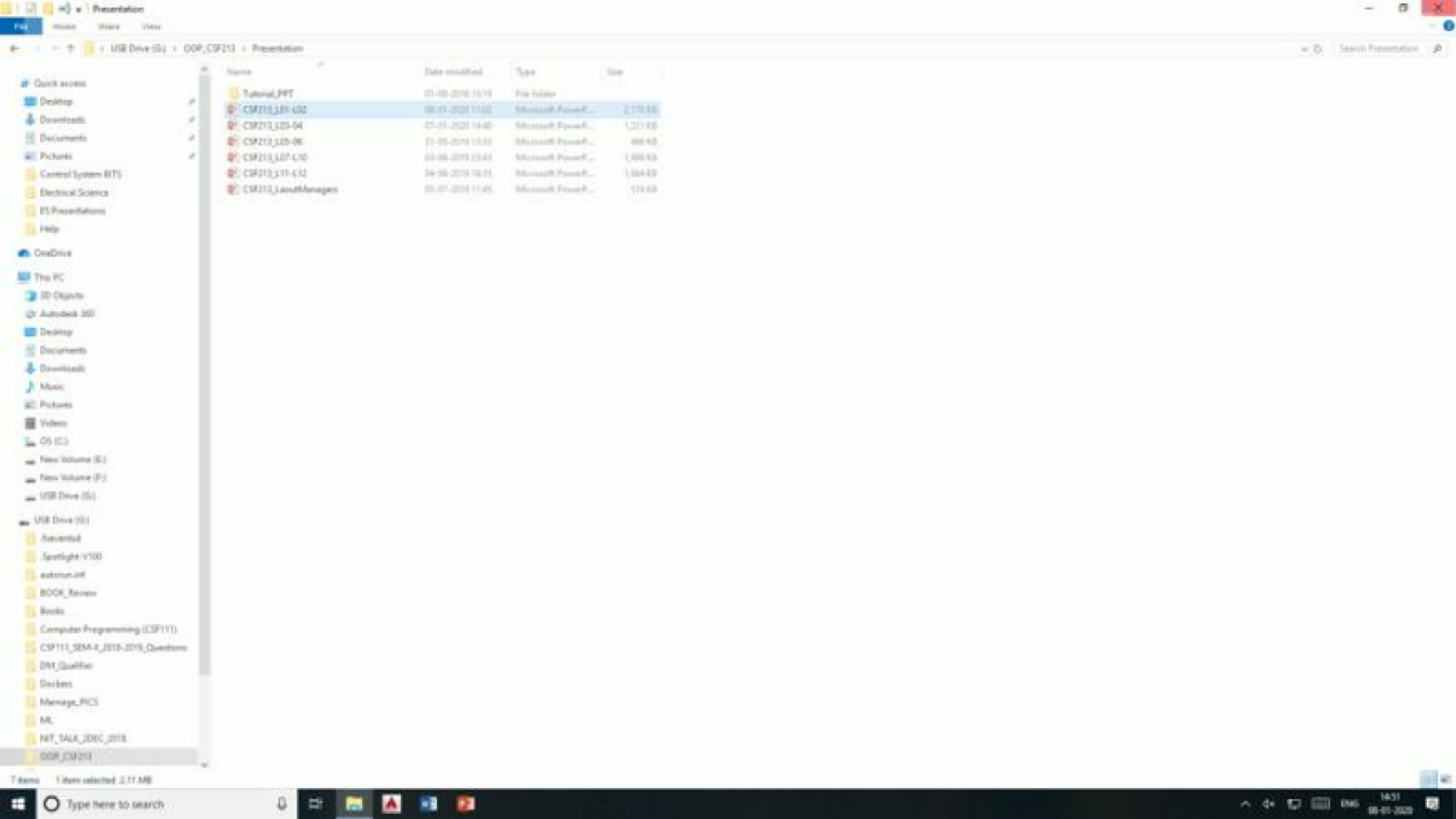
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