AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY

Title of the Activity

Role Play on the Phases of a Compiler

Date of the Activity

March 20, 2025

Class / Course

B.Tech IIIrd Year CSE– Compiler Design

Objective

To help students understand the different phases of a compiler by enacting each phase in the form of a role play, thereby encouraging interactive and experiential learning.

Description of the Activity

The class was divided into groups, each representing a distinct phase of the compiler. The role play was designed to simulate how source code is transformed into executable code, step-by-step. Each group prepared a short script and used props or visual aids to explain their phase in a creative and engaging way.

Phases Covered in the Role Play:

1. **Lexical Analysis**
    - Role: Tokenizer
    - Activity: Read the source code and break it into tokens.
    - Tools/Props: Flashcards with keywords, identifiers, operators.
2. **Syntax Analysis**
    - Role: Parser
    - Activity: Check syntax using grammar rules.

    - Tools/Props: Syntax tree chart.
3. **Semantic Analysis**
    - Role: Semantic Checker
    - Activity: Validate data types, variable declarations.
    - Tools/Props: Semantic rule book.
4. **Intermediate Code Generation**
    - Role: Intermediate Code Generator
    - Activity: Convert syntax tree to intermediate code.
    - Tools/Props: Flowchart or 3-address code examples.
5. **Code Optimization**
    - Role: Optimizer
    - Activity: Improve code efficiency.
    - Tools/Props: Before/After code blocks to show optimization.
6. **Code Generation**
    - Role: Code Generator
    - Activity: Generate final machine code.
    - Tools/Props: Sample machine code on chart paper.
7. **Symbol Table and Error Handling (Support Roles)**
    - Role: Symbol Table Manager & Error Detector
    - Activity: Keep track of symbols and report errors.
    - Tools/Props: Symbol table chart, error pop-ups.

Learning Outcomes

- Students gained practical understanding of each compiler phase.
- Improved teamwork and communication skills.
- Enhanced their ability to explain technical concepts creatively.

Feedback

Students enjoyed the activity and found the role play method effective in remembering the compiler phases. Many expressed that performing the phases helped solidify their theoretical knowledge.

Faculty In-charge

Vijay Kumar Shukla

Department of Computer Science

📌 Conclusion

The *Build Your Own Compiler Using Gamification of Learning* event successfully combined rigorous technical learning with the fun of gamified experiences. The format proved effective in

boosting participant involvement, deepening conceptual understanding, and fostering an innovative learning environment.

📎 Attachments

- Participant List
- Attendance Sheet
- Evaluation List

AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY, LUCKNOW

Role Play

Attendance Sheet

Course Name:	B. Tech	Date:	20/03/25
Branch:	CSE	Year:	IIIrd
Section:	C	Instructor Name:	V. K. Shukla
Topic Name:	Phases of Compiler		

Sr. No	Roll No.	Name of Student	Sign
1	2303630109004	Adarsh Singh	
2	2303630109039	Uttsav Singh	
3	2303630109037	SUMIT KUMAR	Sumit
4	2303630109013	Dinesh Kumar	Dinesh
5	2303630109009	Ammad	
6	2303630109029	Sandeep Maurya	
7	2203630100160	Sumit Kr Upadhyay	Sumit
8	2303630109040	VISHAL KUMAR	
9	2303630109002	ABHISHEK PATEL	Abhishek Patel
10	2203630100174	Vivek Kumar	Vivek Kr
11	2203630100161	Suraj kumar jaiswal	Suraj
12	2203630100158	Jugal Sharma	Jugal

AMBALIKA INSTITUTE OF MANAGEMENT & TECHNOLOGY, LUCKNOW

Role Play

Evaluation Sheet

Course Name: B.Tech | Date: 20/03/25

Branch: CSE | Year: IIIrd

Section: | Instructor Name: V. K. Shukla

Topic Name: Phases of Compiler

Sr No	Roll No.	Group	Name of Student	Role	Content Accuracy (5)	Presentation Skills (5)	Creativity (5)	Team Collaboration (5)	Total Score	Remarks
1.	2303630109004	I	Adarsh Singh	Scanning	5	4	4	5	18	II
	2303630109039	I	Utsav Singh	Scanning	5	4	4	5	18	II
2.	2303630109037	II	Sumit Kumar	Parsing	5	3	3	5	16	
	2303630109013	II	Devesh Kumar	Parsing	5	3	3	5	16	
3.	2303630109009	III	Anmol	Parse tree	5	4	5	3	17	III
	2303630109029	III	Sandeep Maurya	Parse tree	5	4	5	3	17	III
4.	2203630100160	IV	Sumit Kr. Upadhyay	Intermediate code	5	5	5	4	19	I
	2303630109040	IV	Vishal Kr.		5	5	5	4	19	I
5.	2303630109002	V	Abhishek Patel	Code optimization	3	3	4	4	14	
	2203630100174	V	Vivek Kumar		3	3	4	4	14	
6.	2203630100161	VI	Suraj Kr. Jaiswal	code generator	4	4	3	3	14	
	2203630100158	VI	Sujal Sharma		4	4	3	3	14	