SCHOOL OF
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UPES

**BACHELOR OF TECHNOLOGY in**
**COMPUTER SCIENCE & ENGINEERING**

# Exploratory Presentation

# FORM STUDIES

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# Phase 1: Observation and Analysis

## Introduction

Nature is filled with diverse and intricate forms that often inspire design. This assignment aims to help students observe and understand natural forms and derive basic abstract forms that retain the essence of these natural structures. The process will involve observation, abstraction, and creative representation using paper and cardboard as the primary materials.

# Seashell

## Documentation of Observations

- **Sketches**: Draw the shell from multiple perspectives (e.g., side, top-down, and angled views).
- **Key Characteristics**:
  - **Symmetry**: Often has a spiral or radial symmetry.
  - **Rhythm**: The form exhibits repeating patterns of ridges or grooves.
  - **Texture**: The surface alternates between smooth, glossy sections and textured ridges.
  - **Scale**: Varies widely; small but complex.
  - **Proportion**: Fibonacci-like spiral that grows consistently outward.

## Formal Characteristics (Visual Language)

- **Curvatures**: Smooth, organic spirals.
- **Lines**: Concentric and radiating lines accentuate the spiral shape.
- **Folds**: Subtle undulations along the ridges and inner edges.
- **Layers**: Visible growth rings that denote age and structural expansion.

# Maple Leaf

## Documentation of Observations

- **Sketches**: Illustrate the leaf in front, back, and profile views.
- **Key Characteristics**:
  - **Symmetry**: Bilateral symmetry.
  - **Rhythm**: Veins spread outward in a tree-like pattern.
  - **Texture**: Smooth edges punctuated by serrations.
  - **Scale**: Flat, wide plane.
  - **Proportion**: Central stem with balanced, fan-like lobes.

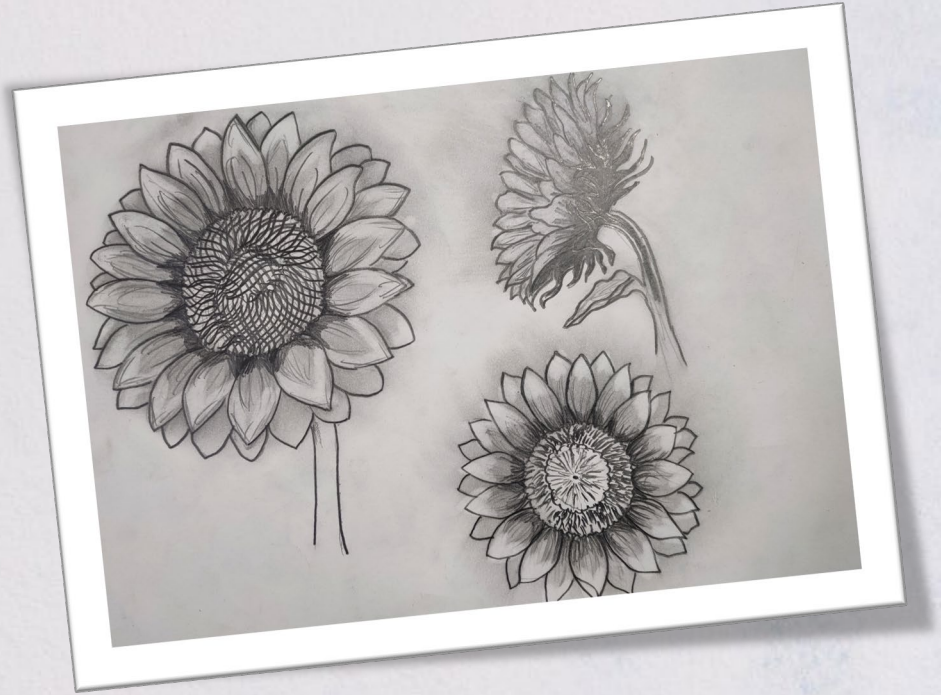
## Formal Characteristics (Visual Language)

- **Curvatures**: Gentle curves at the base transitioning into sharp angles.
- **Lines**: Prominent veins create a network radiating from the petiole.
- **Folds**: Minor folds near the stem create depth.
- **Layers**: Thin, single-layered but with a visual depth due to veins.

# Sunflower

## Documentation of Observations

- **Sketches**: Represent the flower head and stem at various angles.
- **Key Characteristics**:
  - **Symmetry**: Radial symmetry in the flower head.
  - **Rhythm**: Seeds arranged in a Fibonacci sequence.
  - **Texture**: Soft, petal-like edges contrasted with dense, rough seeds.
  - **Scale**: Typically large flower heads compared to the stem.
  - **Proportion**: The flower head is balanced around a central disc, surrounded by uniform petals.



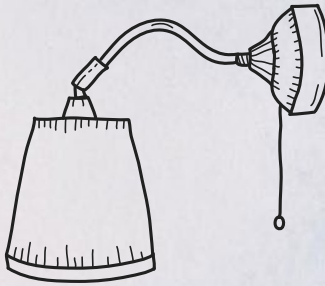
## Formal Characteristics (Visual Language)

- **Curvatures**: Circular petals and seed arrangements.
- **Lines**: Spiraling, mathematical lines in the seed pattern.
- **Folds**: Petals fold outward slightly, giving a three-dimensional form.
- **Layers**: Overlapping petals create a dense outer layer, with seeds forming a structured interior.

# Report: Abstraction and Construction of a 3D Cardboard House


## 1. Introduction

This project focused on designing and constructing a 3D model of a house using cardboard as the primary material. The goal was to abstract the essential structural elements of a house—walls, roof, and openings—while showcasing creativity and craftsmanship. The process emphasized simplicity, stability, and visual appeal.

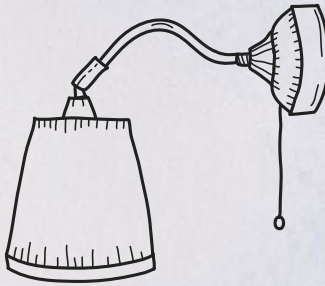


# Abstraction Process

The abstraction began with identifying the key components of a house:

- **Form**: A recognizable structure with a base, walls, and a pitched roof.
- **Openings**: Doors and windows to suggest functionality and accessibility.
- **Proportions**: Balanced dimensions to ensure stability and visual harmony.

Initial sketches explored various house shapes, from simple rectangular forms to more dynamic configurations with multiple roof angles. After selecting a basic rectangular structure with a pitched roof, we experimented with paper and cardboard to test feasibility and refine the design. Techniques like cutting, folding, scoring, and layering were employed to create prototypes.



# Construction of the Final Model

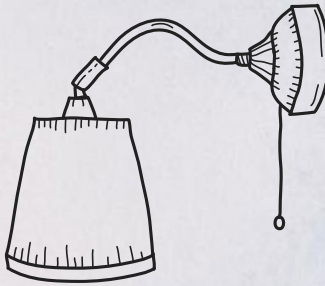
The final model was built from medium-weight corrugated cardboard for stability, with smooth cardboard used for detailed elements. Key construction steps included:

- **Base and Walls**:
  - The base was cut into a rectangular shape, serving as the foundation.
  - Walls were measured, cut, and scored to ensure precise folds for clean edges.
  - Tabs were added to join walls seamlessly.
- **Roof**:
  - The pitched roof was created using two triangular gables and rectangular panels for the slopes.
  - Scoring allowed for smooth bends and ensured proper alignment with the walls.
- **Openings:**
  - Windows and a door were cut into the walls before assembly, adding depth by framing them with layered cardboard strips.
- **Details:**
  - Decorative elements such as a chimney, roof tiles, and steps were crafted from smaller cardboard pieces, adding texture and realism.

# Relation to Original Form

The final model retained the essence of a house while abstracting unnecessary details for simplicity. The pitched roof symbolizes shelter, while the clean, geometric lines emphasize structure and proportion. The addition of openings reinforces the model's functionality.

# Challenges and Solutions



- **Structural Stability**: The lightweight nature of cardboard required careful reinforcement at joints and bases to prevent collapse. Adding tabs and layering cardboard solved this issue.
- **Precision**: Achieving clean cuts and consistent folds was challenging. Using sharp tools and templates ensured accuracy.
- **Material Constraints**: Cardboard’s rigidity limited curved elements, so straight lines were prioritized in the design.

# Conclusion

This project demonstrated the versatility of cardboard as a material for 3D modeling. The process encouraged creative problem-solving and an appreciation for how simple forms can convey complex ideas. The final model successfully abstracts the fundamental characteristics of a house while showcasing clean craftsmanship and thoughtful design.

# Thank You