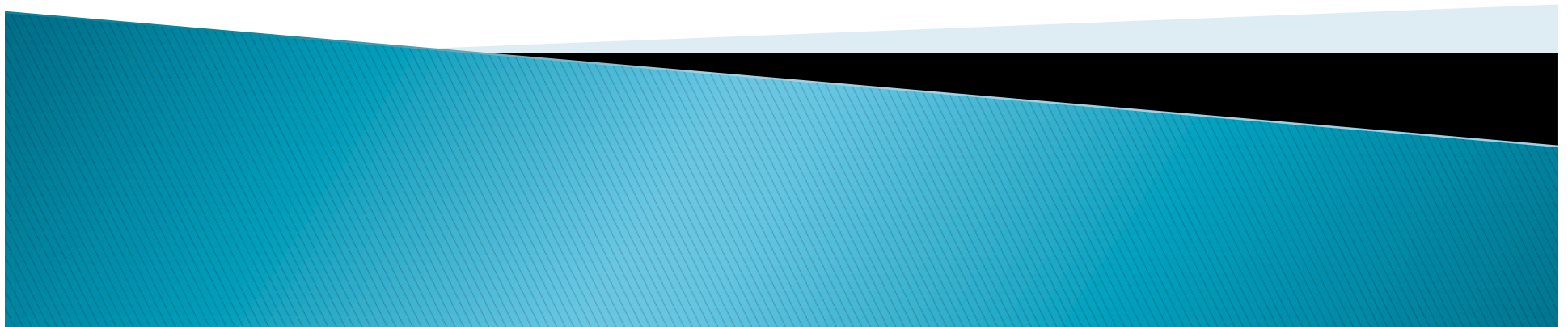# Design Patterns
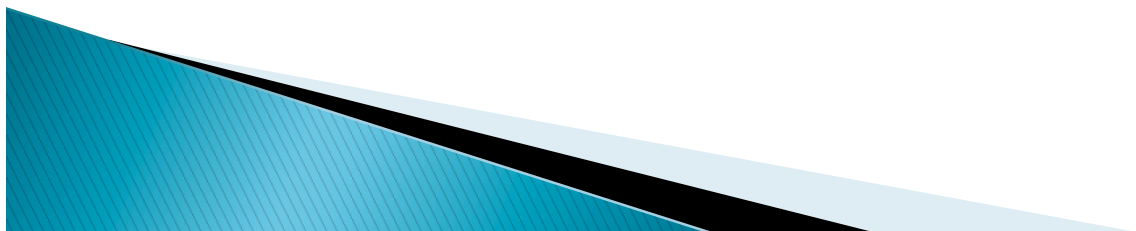# Introduction

COS 121

There are 23 classic patterns categorised as
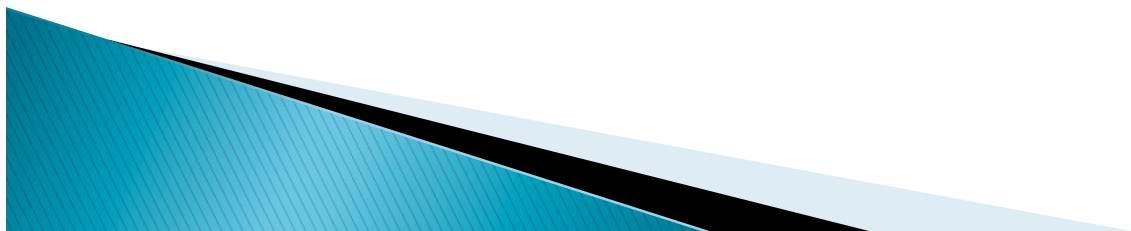- Creational
- Behavioural
- Structural

Definitions

- Design Patterns are recurring solutions to design problems you see over and over.

  The Smalltalk Companion

- Design Patterns constitute a set of rules describing how to accomplish certain tasks in the realm of software development
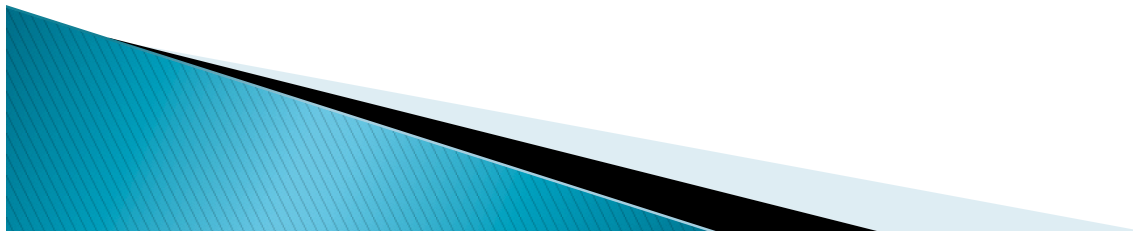
  Pree (1995)

Definitions

▸ Design Patterns focus more on reuse of recurring architectural design themes, while frameworks focus on detail design and implementation

<div align="right">Coplien and Schmidt (1995)</div>

▸ A pattern addresses a recurring design problem that arises in specific design situations and presents a solution to it.

<div align="right">Buschmann et al (1996)</div>

Definitions

- Experienced OO developers build up a repertoire of general principles and idiomatic solutions that guide them in the creation of software. These may be called patterns.

Craig Larman(2006)

Definitions

- Patterns identify and specify abstractions that are above the level of single classes and instances or of components

  GoF (1993)

- Design patterns provide a high-level language of discourse for programmers to describe their systems and to discuss solutions to common problems.

  Judith Bishop (2008)

Definitions

▸ **Design Patterns are programming tools to improve code to be**

- ◦ easier to implement, and

- ◦ easier to maintain.

- ◦ are good answers to common and specialized problems.

- ◦ define a common (programming language independent) programming model that standardise common programming tasks into recognisable forms, giving your projects better cohesiveness.

CG Lasater (2007)
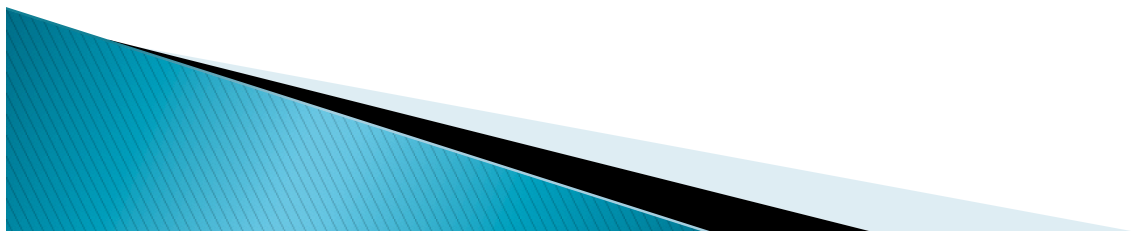
When Design Patterns are applied we achieve

- Improved maintainability of code
- Improved adaptability of code
- Improved reliability of code
- Programmers who are more effective in their work.