# Lab [5]: [Class Diagram]

**Objectives**

The objective of this Lab exercise know how to implement Class diagram to an actual Java program. Passing object as parameter and the use of ArrayList is also included in this Lab exercise.

**Tools/Software Requirement**

* Netbeans 7.1 or higher

**Description**

Figure 1 shows the Class Diagram of a Book class that contains attributes such as Book title, Author, Publisher and date Published. Accessor and mutator methods are also defined in the class diagram. Program code 1 shows the Java Code for the class Book and Program Code 2 shows how to implement Book Class by storing Book class object into an ArrayList.

*Figure 1: Class Diagram for Book Class*

|  |
| --- |
| Book |
| * title: String * author: String * publisher: String * date: String |
| +Book(String,String,String,String)  +setTitle(String): void  +setAuthor(String): void  +setPublisher(String): void  +setDate(String): void  +getTitle(): String  +getAuthor(): String  +getPublisher(): String  +getDate(): String |

**Program Code 1: Class Book.java**

The program below is the implementation of the Book Class Program.

*Note: You can’t run this program since it does not contain main method. You can only compile this program to check for the error. The implementation of this class will be at Program code 2*

public class Book {

private String title;

private String author;

private String publisher;

private String date;

public Book(String title,String author,String publisher,String date){

this.title = title;

this.author = author;

this.publisher = publisher;

this.date =date;

}

public String getTitle(){

return this.title;

}

public String getAuthor(){

return this.author;

}

public String getPublisher(){

return this.publisher;

}

public String getDate(){

return this.date;

}

public void setTitle(String title){

this.title = title;

}

public void setAuthor(String author){

this.author = author;

}

public void setPublisher(String publisher){

this.publisher = publisher;

}

public void setDate(String date){

this.date = date;

}

}

**Program Code 2**

This program shows how to store Book Class object in an ArrayList.

*Note: This is your Main Class where Book Class object is created using ArrayList.*

import java.util.\*;

public class Main {

private static ArrayList<Book> list;

public static void main(String[]args){

Scanner console = new Scanner(System.in);

String title,author,publisher,date;

list = new ArrayList<Book>();

System.out.println("Enter Book Title: ");

title = console.next();

System.out.println("Enter Book Author: ");

author = console.next();

System.out.println("Enter Book Publisher: ");

publisher = console.next();

System.out.println("Enter Book Date: ");

date = console.next();

Book book\_collection = new Book(title,author,publisher,date);

list.add(book\_collection);

for( Book book : list ) {

System.out.println("Book Title:"+book.getTitle());

System.out.println("Book Author:"+book.getAuthor());

System.out.println("Book Publisher:"+book.getTitle());

System.out.println("Book Date:"+book.getDate());

System.out.println("");

}

}

}

**Example Output**

**run:**

**Enter Book Title:**

**C programming how to program**

**Enter Book Author:**

**D.S Malikl**

**Enter Book Publisher:**

**Cengage Publisher**

**Enter Book Date:**

**2010**

**Book Title:C programming how to program**

**Book Author:D.S Malik**

**Book Publisher:C programming how to program**

**Book Date:2010**

**Lab Tasks**

Create a Java Class for the given Class Diagram below. Use the Main class in the given example and create another ArrayList object that will store date for the Class diagram below.

|  |
| --- |
| Borrower |
| * name: String * address: String * contact\_number: String |
| + getName(): String  +getAddress(): String  +getContact\_Number(): String  +setName(String): void  +setAddress(String):void  +setContact\_Number(String):void |

* use the ArrayList to store borrower information.
* Print List of borrower information and book information.