Lab Manual

**JAVA Programming**

**AY – 2023-24**

# Name of the student:

**UCID:**

**Class:**

**Batch:**

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Course Name: Java Programming

**Course Outcomes**

|  |  |  |  |
| --- | --- | --- | --- |
| CO | CO—DESCRIPTION | PO / PSO  Mapping | Cognitive  Level |
| **MC506.1** | Build programming concept using OO constructs | PO1, PO2 | Applying |
| **MC506.2** | Analyze real world problem for database connection and file handling using  Exception handling | PO1, PO2, PO3, PO4, PO7, PO10 | Applying |
| **MC506.3** | Develop Web Applications using JSP and servlets | PO1, PO2, PO4, PO5, PSO2 | Creating |
| **MC506.4** | Explain concept of Spring and Hibernate in advanced JAVA programming | PO1, PO2, PO4, PO5, PO10, PO11 | Applying |

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| **Course Code** | **Course Name** | **Teaching Scheme**  **(Hrs/week)** | | | | | | | **Credits Assigned** | | | | | |
| **L** | **T** | **P** | | **O** | | **E** | **L** | | **T** | **P** | | **Total** |
| **MC506** | **Java Programming** | **2** | **--** | **4** | | **3** | | **9** | **-2** | | **--** | **2** | | **4** |
| **Examination Scheme** | | | | | | | | | | | | |
| **Component** | | | **ISE** | | **MSE** | | | **ESE** | | | **Total** | |
| **Theory** | | | **50** | | **50** | | | **100** | | | **200** | |
| **Laboratory** | | | **100** | | **--** | | | **100** | | | **200** | |

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| --- | --- | --- | --- | --- | --- |
| Expt.  No. | Experiment Details | Ref. | Marks | CO Mapping | No. of Hours |
| 1 | Fundamentals of Java Programming | 1,2 | 5 | CO1 | 12 |
| 2 | Designing a real world problem based on Packages and Interfaces Lambda Expression | 1,2 | 5 | CO1 | 4 |
| 3 | Implementation of Generics and Collections | 1,2 | 5 | CO1 | 8 |
| 4 | Apply file handling methods for JAVA | 3 | 5 | CO2 | 4 |
| 5 | Design and implementation of Exception handling Multi-threading and File Handling | 4 | 5 | CO2 | 4 |
| 6 | Event handling and GUI programming Database Programming | 3 | 5 | CO2 | 4 |
| Single problem statement/case study including Lab 7-8 | |  |  |  |  |
| 7 | Implementation of real world problem based on servlet concept | 4 | 5 | CO3 | 8 |
| 8 | Implementation of real world problem based on JSP designing concept | 4 | 5 | CO3 | 4 |
| 9 | Demonstrate implementation of real world problem based on Spring Frameworks | 6,7 |  | CO4 | 4 |
| 10 | Demonstrate Working model based on real time problem using Hibernate | 6,7 |  | CO4 | 4 |
| Total Marks | | | 40 |  | 56 |

Tools Required: Eclipse, Visual Studio Code, Intellij code, Netbeans

References:

1. Herbert schildt, “ The complete reference JAVA2”, Tata McGraw Hill , Seventh Edition.

2. Sharanam Shah and vaishali shah, “Core Java for beginners”,SPD, First Edition.

3. Kogent Learning Solutions Inc, “Java Server Programming java EE6”, Dreamtech press First

Edition.

4. Ivan Byaross, “Commercial web development using java 2.0”, BPB, Revised Edition.

5. Marty Hall and Larry Brown , “ Core Servlets and Java Server Pages :Vol I: Core

6. Craig Walls, “Spring in Action”, 3rd Edition, Manning

7. Spring 5: End-To-End Programming: Build enterprise-grade applications using Spring MVC,

Hibernate, and RESTful APIs Paperback – Import, 21 Dec 2018 by Claudio Eduardo de

Oliveira, Dinesh Rajput, Rajesh R

**LABORATORY ASSESSMENT**

CLASS: SEM: BRANCH: ACADEMIC YEAR:

COURSE: COURSE CODE:

STUDENT NAME: ROLL NO:

# Please Give Good (1), Average (0.5) or Poor (0.3) and do not round the marks

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| **Performance Indicator** | | **Experiment Number** | | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Lab Ethics** | **1** |  |  |  |  |  |  |  |  |  |  |
| **coding and debugging** | **1** |  |  |  |  |  |  |  |  |  |  |
| **Knowledge & Application** | **1** |  |  |  |  |  |  |  |  |  |  |
| **Documentation & Time Management** | **1** |  |  |  |  |  |  |  |  |  |  |
| **Testing** | **1** |  |  |  |  |  |  |  |  |  |  |
| **Marks Per Experiment** | |  |  |  |  |  |  |  |  |  |  |
| **Total Marks** | |  |  |  |  |  |  |  |  |  |  |

**Faculty In-Charge Head of the Department**



**Rubrics analysis**

**Laboratory Assessment Rubrics for Lab 1-6 and Lab 9-10**

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance Indicator** | **Good(1)** | **Average(0.5)** | **Poor(0.2)** |
| **Lab Ethics (1)** | Punctuality, Proper use of equipment, Follow procedure that accounts for safety and clean-up. Always follow instructions given. | Consistently regular but sometimes missed, Follows procedure of safe practices but sometimes misses minor safety issues and fail to clean-up. Follow instructions sometimes. | Irregular, Fail to follow safety procedure and clean up.  Does not follow given instructions. |
| **coding and debugging (1)** | Moderate Efforts are taken to implement the experiment,  Efforts taken to implement the experiment, design diagrams. Lab experiment is always writing in proper format for all experiments. Clearly and effectively documented. | Moderate Efforts are taken to implement the experiment, design diagrams. Lab experiment is always writing in proper format for all experiments. Clearly and effectively documented. | No Efforts are taken. |
| **Knowledge & Application (1)** | Demonstrate good knowledge.  Knows how to apply theory concept independently and find solution. | Demonstrate some knowledge.  Apply theory concept with help from instructor or peer. | Demonstrate little or no knowledge.  Does not put effort to apply theory concept. |
| **Documentation & Time Management (1)** | Submits clear and concise documentation.  Proactively plans the activities assigned and stick to timelines. | Submits documentation, but not well formatted. Delayed submission of work. | Does not submit work on time. |
| **Testing (1)** | Prototype passes all testing parameters | Some loopholes are present in Prototype | Prototype is not build properly and failed in testing. |

**Laboratory Assessment Rubrics for Lab 7-8**

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance Indicator** | **Good(1)** | **Average(0.5)** | **Poor(0.2)** |
| Problem Statement and Role of Technology (1) | * Innovative ideas, skill of proposing various solutions, convincing the proposed solution with the clear concepts, statement is excellent and there is scope for future enhancement. * The project's use of technology helps students achieve learning objectives. And use of appropriate and creative courses studied/studying. It should address minimum of 4 subjects and justify the need for that subject. | * The concepts are clear. Able to frame the problem statement. * The project's use of technology is focused but does not take full advantage of the courses. Students use technology but do not learn to manipulate the technology to express ideas or concepts. Moderately address the relevance of subjects. | * Statement is not clear due to lack of concept building. * -The project's use of technology treats students as passive recipients of information, is not well-defined, does not support student learning, or is a trivial or inappropriate use of the medium. No subject relevance. |
| Identifying the modules and test cases for each(1) | * Complete mapping of the entire specified functional and nonfunctional requirements to the modules. * Identify the two categories of test cases for each module to check the validity and non-validity (exception handling) of each module. And proposing the solution for invalid inputs (exception handling). | * Complete mapping of the entire specified functional requirements to the modules. * Identify the two categories of test cases for each module to check the validity and non-validity (exception handling) of each module. | * Moderately mapping of the specified functional requirements to the modules. * Unable to distinguish between the valid and invalid inputs |
| Coding and Integrating the modules (1) | * The program is completely modular, more than one level of function calls. * Modules are integrated smoothly with minimal errors. | * The program is somewhat modular with several function calls. * Modules are integrated with errors. | * The whole program consists of the main module only. |
| Project Report and **Contribution to the team project work** (1) | * Project report is according to the specified Format. * Collects and presents to the team a great deal of relevant information; offers well-developed and clearly expressed ideas directly related to the group's purpose. | * Project report is according to the specified format. * Collects basic, useful information related to the project; occasionally offers useful ideas to meet the team's needs | * Project report is according to the specified format but some mistakes. * Does not collect any relevant information; no useful suggestions to address team's needs; |
| **Testing (1)** | Prototype passes all testing parameters | Some loopholes are present in Prototype | Prototype is not build properly and failed in testing. |

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Name: Vivek Tiwari

# Course Name: Java Programming UID: 2023510059

# Programming

Experiment No.1

Date:

Aim: Fundamentals of Java Programming

CO Mapping – CO 1

Objective:

* To understand declaration of Classes, and Methods with its all features such as Constructors, Access Specifier
* To understand Classes, Instance variables, Methods, Constructors, Access
* Specifiers as basic fundamentals
* Implement Abstract Classes and Wrapper Classes for given problem statement
* Design and implement Inheritance, Polymorphism in JAVA
* Demonstrate Use of Static, final, super and this keyword
* Demonstrate creating user defined package, Access control protection,
* Defining interface, Implementing interface

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Course Name: Java Programming

# Experiment No.2

Date:

Aim: Designing a real world problem based on Packages and Interfaces Lambda Expression.

CO Mapping – CO 1

Objective:

1. To create user defined package following Access control protection,
2. To develop multiple inheritance using interfaces.
3. To understand Lambda function in JAVA

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Course Name: Java Programming



Experiment No.3

Date:

Aim: Implementation of Generics and Collections.

CO Mapping – CO 1

Objective:

* 1. To understand concept of Generic and collection
  2. To recognize various declaration and usage of generic classes with real time problems
  3. Design and implement Collections in JAVA
  4. Develop program Lambda Expressions in GUI Applications

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Course Name: Java Programming

Experiment No.4

Date:

Aim: Apply file handling methods for JAVA.

CO Mapping – CO 2

Objective:

* 1. Connect the JAVA program to files using different techniques
  2. Show the transfer of the data from console to and fro from files.

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA Course Code: MC506 Course Name: Java Programming

Experiment No.5

Date:

Aim: Design and implementation of Exception handling Multi-threading and File Handling

CO Mapping – CO 2

Objective:

1. To apply exception handling techniques on classes like mathematical, file handling string handling etc.
2. To demonstrate working of multiple threads for real time problem definition

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA

# Course Code: MC506 Course Name: Java Programming

Experiment No.6

Date:

Aim: Event handling and GUI programming Database Programming

CO Mapping – CO 3 Objective:

1. To design program showing connection with database transferring data from database to application.
2. To demonstrate events handling with the help of AWT

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA

# Course Code: MC506 Course Name: Java Programming

Experiment No.7

Date:

Aim: Implementation of real world problem based on servlet concept

CO Mapping – CO 3

Objective:

1. To write servlet programs
2. To connect servlet programs with the help of JSP with database

Lab Exercise:

Code:

Output:

Observation:

# Academic Year: 2023-24 Semester: II Class: FYMCA

# Course Code: MC506 Course Name: Java Programming

# Experiment No.8

Date:

Aim: Implementation of real world problem based on JSP designing concept

CO Mapping – CO 3

Objective:

1. To develop the JSP based dynamic web pages.
2. To show to and fro of data from database to JSP

Lab Exercise:

Code:

Output:

Observation:

**Academic Year: 2023-24 Semester: II Class: FYMCA**

**Course Code: MC506 Course Name: Java Programming**

# Experiment No.9

Date:

Aim: Demonstrate implementation of real world problem based on Spring Frameworks

CO Mapping – CO 4

Objective:

1. To develop program based on Spring framework

Lab Exercise:

Code:

Output:

Observation:

**Academic Year: 2023-24 Semester: II Class: FYMCA**

**Course Code: MC506 Course Name: Java Programming**

# Experiment No.10

Date:

Aim: Demonstrate working model based on real time problem using Hibernate

CO Mapping – CO 4

Objective:

1. To design JAVA program based on hibernate

Lab Exercise:

Code:

Output:

Observation: