Look forward, learn modern knowledge, and do not waste time in studies of old subjects of no values.

2021-22

Computer Lab Manual

B.Sc. (C.A.) Semester-V

CCB-5P2: PRACTICAL LAB – V

DEPARTMENT OF COMPUTER SCIENCE

ALIGARH MUSLIM UNIVERSITY ALIGARH

CREDITS

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Important Instructions to the students in the ongoing Covid-19 Scenario

❐ **In the present Covid-19 scenario, all the labs will be conducted ONLINE till the further instructions issued by the University.**

❐ **Students are instructed to perform their lab exercises/assignments at their own system from their respective places.**

❐ **During this prevailing situation (COVID-19 crises), the mode (policies/rules) of conducting Lecture/Lab classes will be as per the instructions issued by the University from time to time.**

❐ **The students are advised to complete the weekly activities/assignments well in time (i.e., within the same week).**

❐ **The students are also advised to maintain the soft copy of the Lab File of their completed activities/assignments in the prescribed format.**

!! Stay Home, Stay Safe !!

Lab Manual: Practical Lab – V (CCB-5P2)

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COURSE TITLE: Practical Lab -V	**COURSE CODE:** CCB - 5P2
CREDIT: 2	**PERIODS PER WEEK:** 3
CONTINUOUS ASSESSMENT: 40 Marks	**EXAMS:** 60 Marks

COURSE DESCRIPTION

This assignment on Java and Web Engineering is designed for the students of B.Sc. (Computer Applications) –V Semester. Java is one of the most popular object-oriented programming languages. Its applications are enormous and a good understanding of Java will definitely give the students a technical edge. Many open source editors of Java are available. Some famous of them are Eclipse, NetBeans, BlueJ and JCreator. Whereas knowledge of Web Engineering is essential to develop web based applications. In this lab course students will learn php, CSS, JavaScript etc.

CONTENT

This Lab assignment course is designed to help students to create database and apply PL/SQL to manipulate the database. Several live scenarios have been included in the assignment to design E-R Diagram and subsequently create database. Students are supposed to write queries for creating, retrieving and manipulating the database. This course is indented to develop a deep understanding of various query languages such as DDL, DCL, DML, PL.

OBJECTIVES

After completing this Lab assignment, the students should be able to:

- To understand Object Oriented Concepts using Java Language.

- To get familiarize with Java data types, branching and looping construct, Class, Objects, Inheritance, Abstract Class, Polymorphism, Interface etc.

- To develop, debug and document programs in Java using OOP paradigms.

- To learn advance concepts such as JDBC.

- To learn to create and document reference architecture for a Web based technological product.

- To learn phases of Web Site development and the technologies of web application.

- To understand the concept of Web Application Development and its Architecture.

- To understand the Essentials of Web Application Development and practice web page designing techniques

OUTCOMES

After completing this course, the students would be able to:

❒ Understand the concept of relational database management system.

❒ Understand the concept of Object-relational database management system.

❒ Comprehend query languages and their usage.

❒ Logically identify logical entities and their relationships.

❒ Draw Entity relationship diagram for any system.

❒ Create cursor, function, procedure, triggers and other database objects.

HOW TO DO WELL IN THIS COURSE

❒ The students are advised to attend all their theory classes and respective labs regularly as both are integrated to each other. If any student will miss the theory lecture, he/she may not able to do well in lab related to that topic.

- The students are advised to submit the assignments given in theory and lab classes timely to their respective Teachers/Instructors online.

- The students should demonstrate disciplined and well behaved demeanor in the Department.

- Each student shall be assigned a system in their introductory lab. They are advised to do their work on that system only for the whole semester. Students should store all their lab activities regularly.

- All students are advised to understand course objectives and outcomes and achieve both during their lab work.

- The students are advised to follow books/eBooks/online tutorial/other online study material links given in lecture/lab manual/ syllabus references. These study materials are very helpful in terms of skills, knowledge and placement.

- This Lab course is very important in terms of placement. Therefore, students are advised to implement all the problems by her /him given in the individual week.

- All students are advised to solve old placement papers for campus selection. Following links may be useful for the preparation of your campus placements.

  - https://www.indiabix.com/placement-papers/companies/
  - https://www.offcampusjobs4u.com/download-tcs-placement-test-question-papers-with-solutions/
  - https://www.indiabix.com/placement-papers/tcs/
  - https://www.firstnaukri.com/career-guidance/infosys-placement-papers-with-solutions-2019-firstnaukri-prep
  - https://prepinsta.com/ibm/
  - https://www.faceprep.in/infosys/infosys-aptitude-questions/

- ➢ https://alpingi.com/infosys-placement-papers-solution-pdf-download/
- ➢ http://placement.freshersworld.com/

❒ The Students are advised to follow mentioned tutorials links:

- ➢ http://drrafiq.org/
- ➢ https://www.w3schools.com/java/
- ➢ https://www.tutorialspoint.com/java/index.htm
- ➢ https://www.javatpoint.com/java-tutorial
- ➢ https://www.tutorialspoint.com/php/index.htm
- ➢ https://www.geeksforgeeks.org/php/

❒ The Students are advised to follow below Links for installing application software:

- ➢ https://www.eclipse.org/downloads/
- ➢ https://netbeans.org/downloads/6.1/index.html

❒ The students are advised to use the following online editors which are much helpful during the online classes:

- ➢ https://www.jdoodle.com/online-java-compiler/
- ➢ https://www.codechef.com/ide
- ➢ https://www.onlinegdb.com/online_java_compilerc
- ➢ https://rextester.com/l/java_online_compiler
- ➢ https://paiza.io/en/projects/new?language=java
- ➢ https://www.onlinegdb.com/online_php_interpreter
- ➢ http://phpfiddle.org/

RULES AND REGULATIONS

Students are required to strictly adhere to the following rules.

❒ The students must complete the weekly activities/assignments well in time (i.e., within the same week).

☐ The students must maintain the Lab File of their completed activities/assignments in the prescribed format (Appendix-1).

☐ The students must get the completed weekly activities/assignments checked and signed by the concerned teachers in the Lab in the immediate succeeding week. Failing which the activities/assignments for that week will be treated as incomplete.

☐ At least TEN (10) such timely completed and duly signed weekly activities/assignments are compulsory, failing which students will not be allowed to appear in the final Lab Examination.

☐ The students need to submit the deliverables for each exercise duly signed by the Teacher.

☐ Each question will be evaluated on a scale of 10 points.

☐ The students need to ensure that each question is assessed and signed by the Teacher in the week/time.

☐ Late submission would not be accepted after the due date.

☐ Cooperate, collaborate and explore for the best individual learning outcomes but copying is strictly prohibited.

APPENDIX–I

Template for the Index of Lab File

WEEK NO.	PROBLEMS WITH DESCRIPTION		PAGE NO.	SIGNATURE OF THE TEACHER WITH DATE
1	1#			
	2#			
	3#			
2	1#			
	2#			
	3#			
3	1#			
	2#			
	3#			

Note: The students should use Header and Footer mentioning their roll no. & name in footer and page no in header.

Introduction and software requirements to run the java programs:

1#   What are the softwares that help to run java programs.

2#   What is JDK and JRE.

3#   What is eclipse IDE.

4#   How to run the java program in Eclipse/Netbeans IDE.

5#   What are the softwares other than eclipse/netbeans to run the java programs.

Install Java JDK 8 in Windows

This Java Development Kit (JDK) allows you to code and run Java programs. It's possible that you install multiple JDK versions on the same PC. But Its recommended that you install only latest version.

Following are steps to install Java in Windows

Step 1)

Go to link https://www.oracle.com/java/technologies/javase-downloads.html. Click on Download JDK. for java latest version.

Step 2) Next,

1. Accept License Agreement

2. Download latest Java JDK for your version (32 or 64 bit) of java for Windows.

Step 3) Once the download is complete, run the exe for install JDK. Click Next

Step 4) Select the PATH for Java installation and click next.
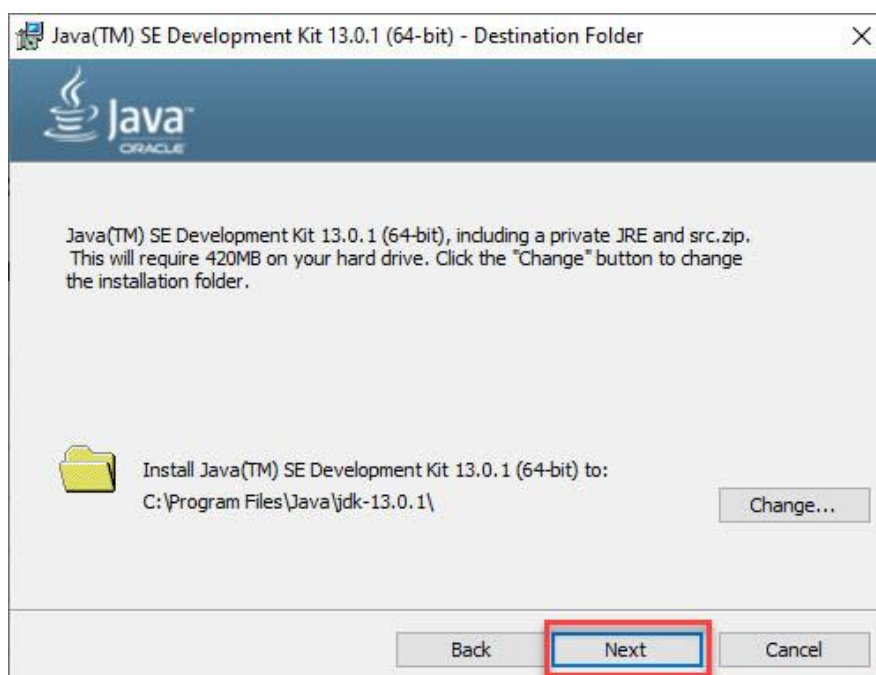

Step 5) Once installation is complete click Close

How to set Environment Variables in Java: Path and Classpath

The PATH variable gives the location of executables like javac, java etc. It is possible to run a program without specifying the PATH but you will need to give full path of executable like **C:\Program Files\Java\jdk-13.0.1\bin\javac A.java** instead of simple **javac A.java**
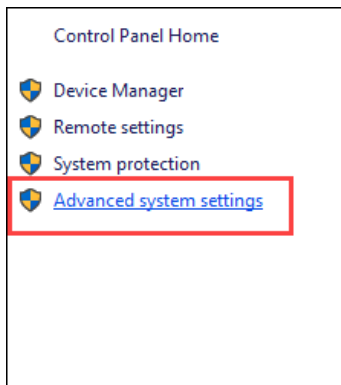
The CLASSPATH variable gives location of the Library Files.

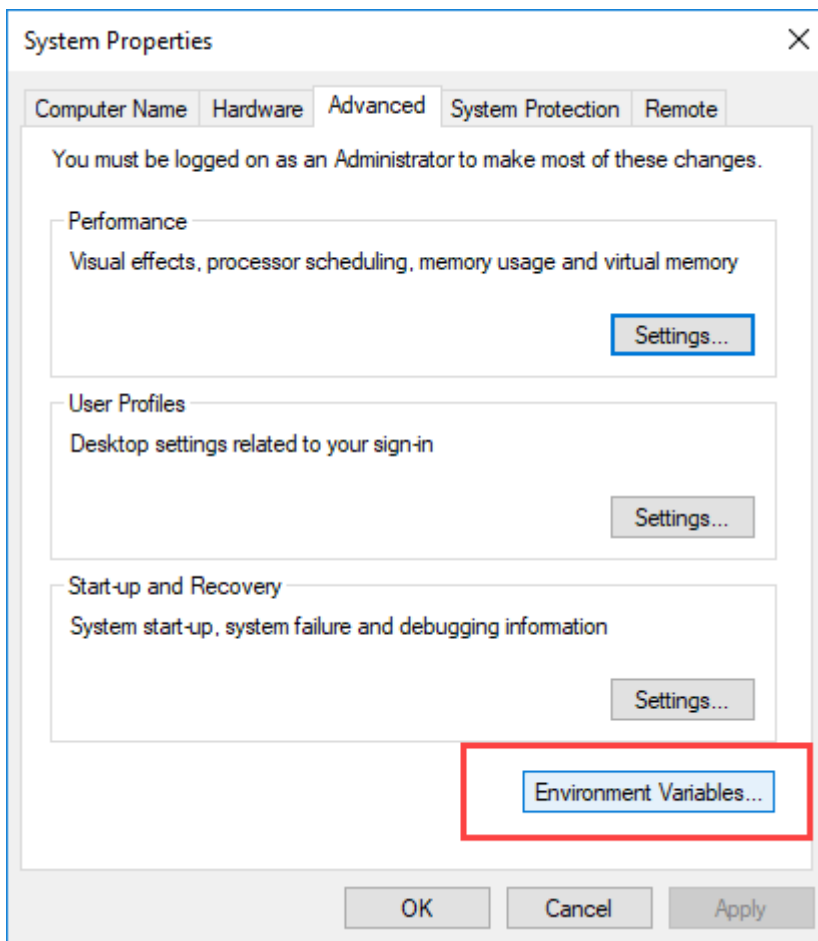Let's look into the steps to set the PATH and CLASSPATH

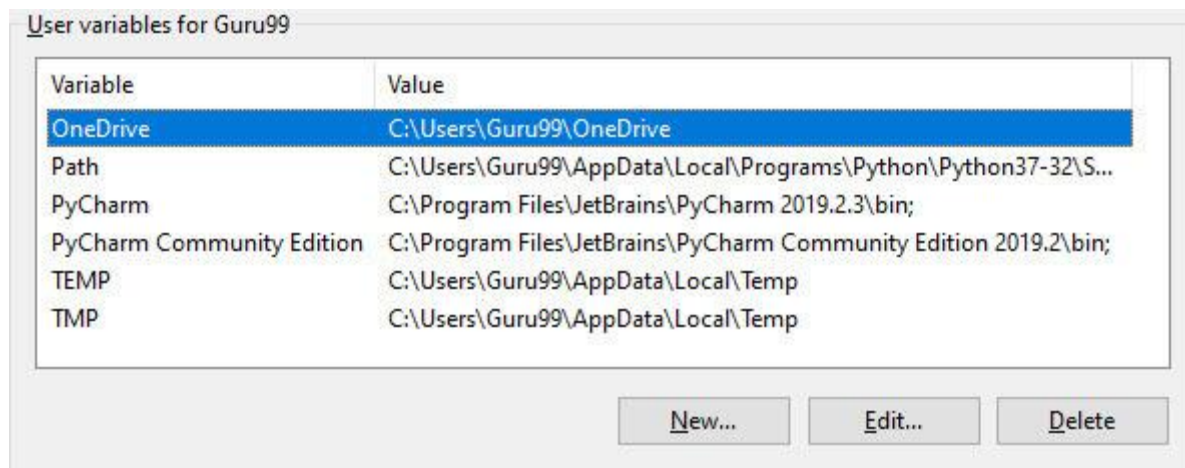**Step 1)** Right Click on the My Computer and Select the properties
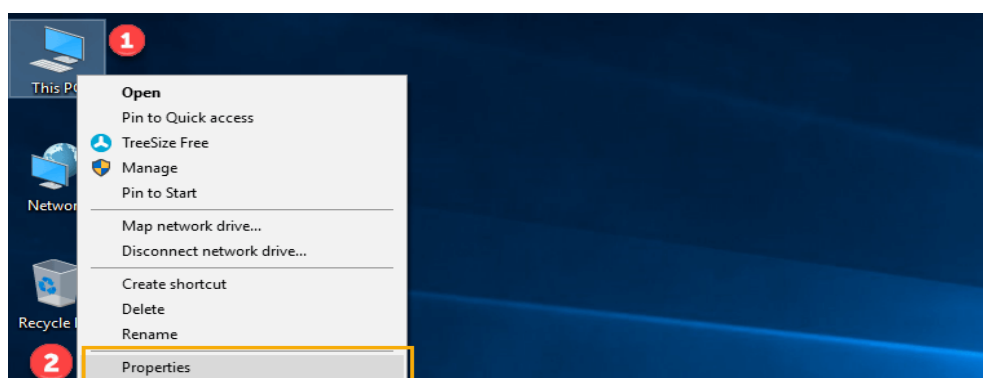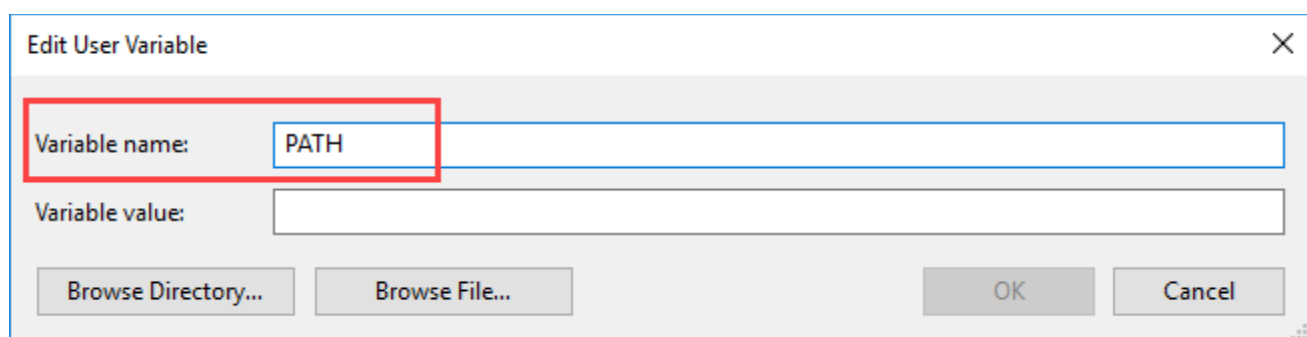

Step 2) Click on advanced system settings

Step 3) Click on Environment Variables
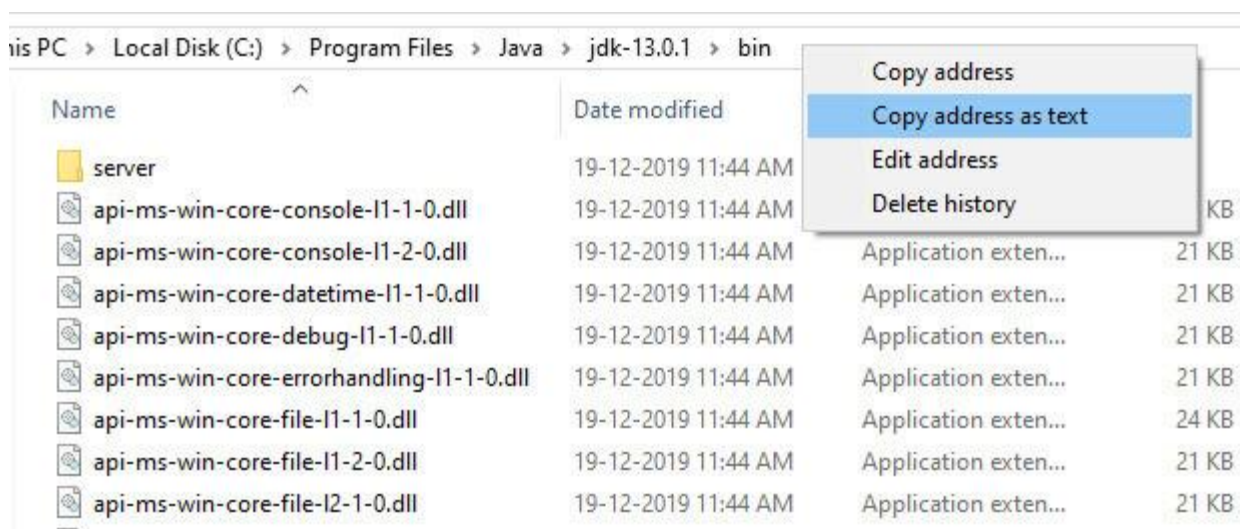

Step 4) Click on new Button of User variables
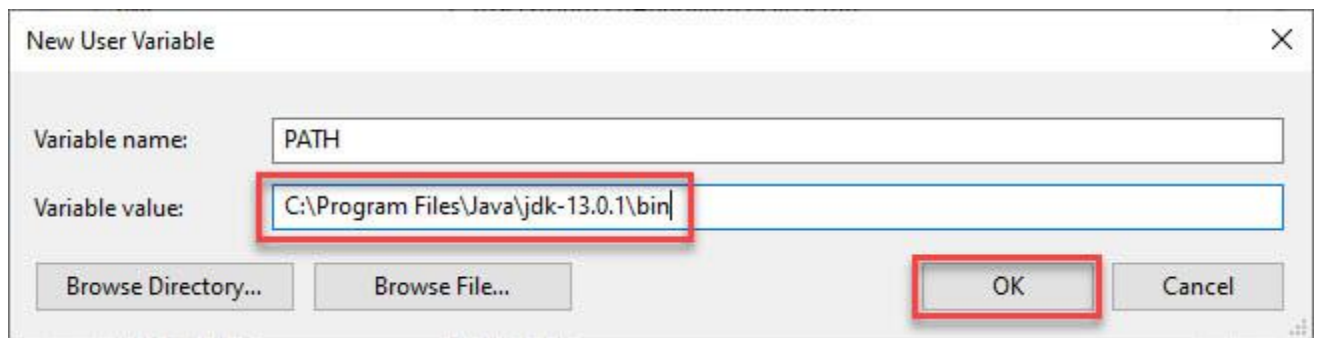
Step 5) Type PATH in the Variable name.

Step 6) Copy the path of bin folder which is installed in JDK folder.

Step 7) Paste Path of bin folder in Variable value and click on OK Button.

Note: In case you already have a PATH variable created in your PC, edit the PATH variable to

PATH = <JDK installation directory>\bin;%PATH%;

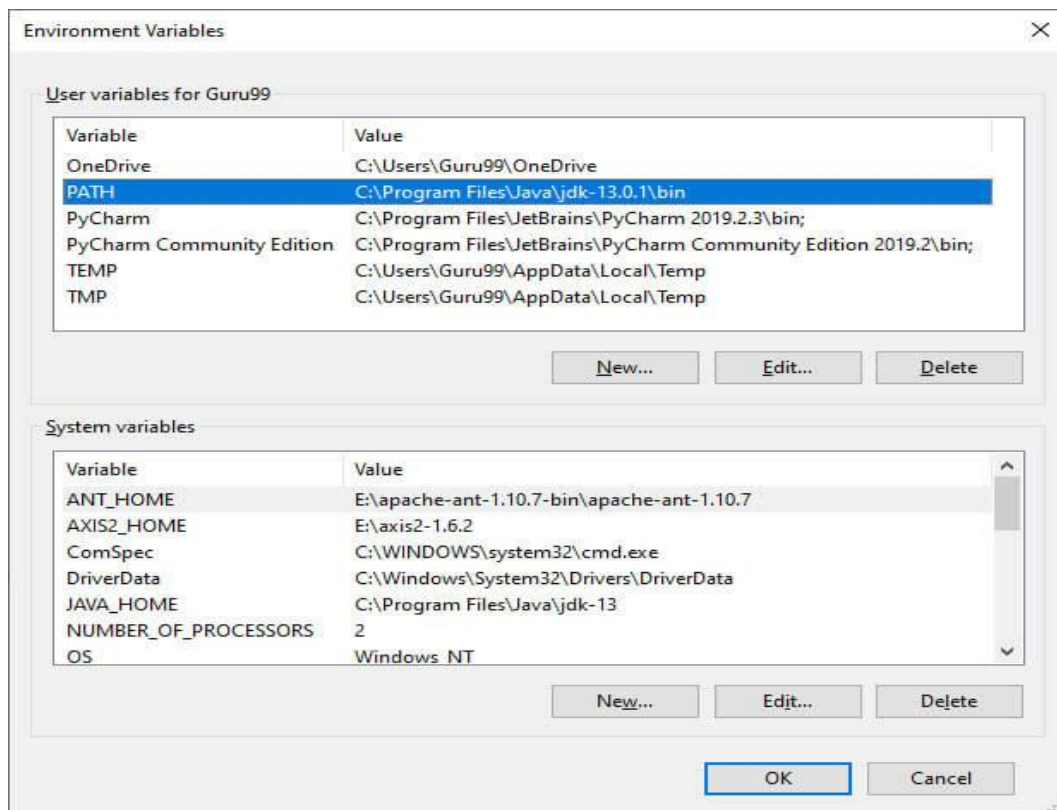Here, %PATH% appends the existing path variable to our new value

Step 8) You can follow a similar process to set CLASSPATH.
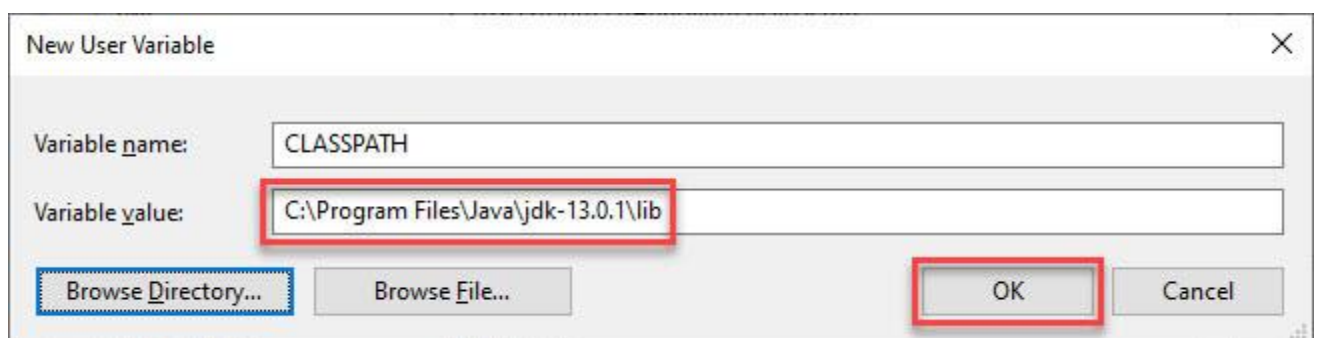
Note: In case you java installation does not work after installation, change classpath to

CLASSPATH = <JDK installation directory>\lib\tools.jar;

Step 9) Click on OK button

Step 10) Go to command prompt and type javac commands.

If you see a screen like below, Java is installed.

Introduction and software requirements for HTML/Javascript PHP programs:

> 1# Introduction to HTML and Javascript.
>
> 2# What are the softwares that helps to run PHP programs.
>
> 3# How to install web server on your local machine.
>
> 4# How to install XAMP server on your local machine.
>
> 5# What is IIS server and how to install on your local machine.

To know how to setup PHP

Why PHP?

PHP remains the most widespread and popular server-side programming language on the web. It is installed by most web hosts, has a simple learning curve, close ties with the MySQL database, and an excellent collection of libraries to cut your development time. PHP may not be perfect, but it should certainly be considered for your next web application. Both Yahoo and Facebook use it with great success.

Why Install PHP Locally?

Installing PHP on your development PC allows you to safely create and test a web application without affecting the data or systems on your live website. This article describes PHP installation as a module within the Windows version of Apache 2.2.

All-in-One packages

There are some excellent all-in-one Windows distributions that contain Apache, PHP, MySQL and other applications in a single installation file, e.g. XAMPP (including a Mac version), WampServer and Web.Developer. There is nothing wrong with using these packages, although manually installing Apache and PHP will help you learn more about the system and its configuration options.

The PHP Installer

Although an installer is available from php.net, I would recommend the manual installation if you already have a web server configured and running.

Manual Installation

Manual installation offers several benefits:

- backing up, reinstalling, or moving the web server can be achieved in seconds (see 8 Tips for Surviving PC Failure) and

- you have more control over PHP and Apache configuration.

Step 1: Download the files

Download the latest PHP 5 ZIP package from www.php.net/downloads.php

As always, virus scans the file and checks its MD5 checksum using a tool such as fsum.

Step 2: Extract the files

Install the PHP files to C:\php, so create that folder and extract the contents of the ZIP file into it.

PHP can be installed anywhere on your system, but you will need to change the paths referenced in the following steps.

Step 3: Configure php.ini

Copy C:\php\php.ini-development to C:\php\php.ini. There are several lines you will need to change in a text editor (use search to find the current setting). Where applicable, you will need to remove the leading semicolon to uncomment these setting.

Define the extension directory:

extension_dir = "C:/php/ext"

Enable extensions. This will depend on the libraries you want to use, but the following extensions should be suitable for the majority of applications:

extension=curl

extension=gd2

extension=mbstring

extension=mysql

extension=pdo_mysql

extension=xmlrpc

If you want to send emails using the PHP mail() function, enter the details of an SMTP server (your ISP's server should be suitable):

[mail function]

; For Win32 only.

SMTP = mail.myisp.com

smtp_port = 25

; For Win32 only.

sendmail_from = my@emailaddress.com

Step 4: Add C:\php to the path environment variable

To ensure Windows can find PHP, you need to change the path environment variable. Open Settings, type 'environment variables' into the search field and open the result. Select the "Advanced" tab, and click the "Environment Variables" button.

Scroll down the System variables list and click on "Path" followed by the "Edit" button. Click "Edit text" and add ;C:\php to the end of the Variable value line (remember the semicolon).
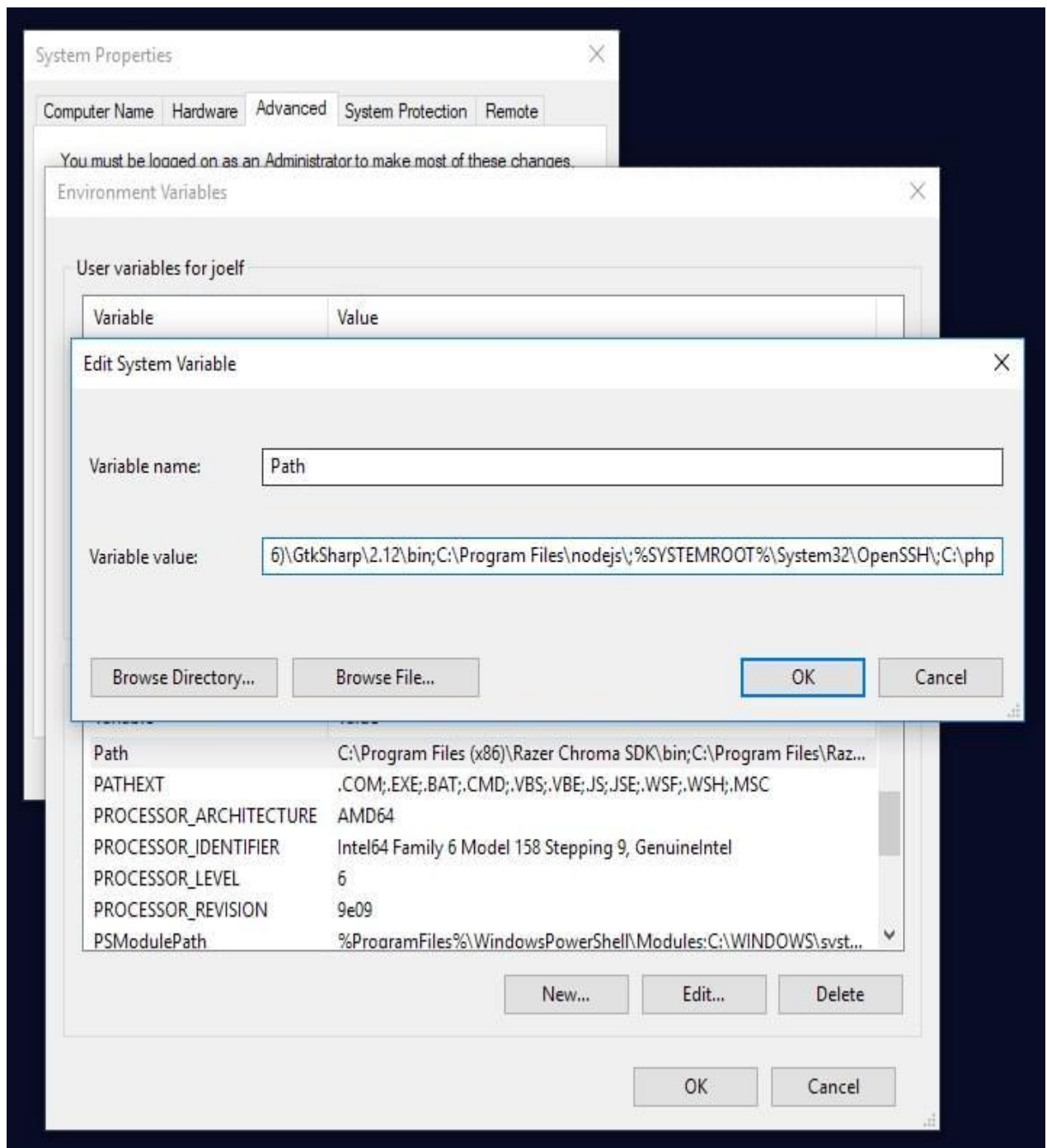
Now click OK until you're out. You might need to reboot at this stage.

Step 5: Configure PHP as an Apache module

Ensure Apache is not running (use net stop Apache2.2 from the command line) and open its confhttpd.conf configuration file in an editor. The following lines should be changed:

On line 239, add index.php as a default file name:

DirectoryIndexindex.php index.html

At the bottom of the file, add the following lines (change the PHP file locations if necessary):

PHP5 module

LoadModule php5_module "c:/php/php5apache2_2.dll"

AddType application/x-httpd-php .php

PHPIniDir "C:/php"

Save the configuration file and test it from the command line (Start > Run >cmd):

cd Apache2bin

httpd -t

Step 6: Test a PHP file

Create a file named index.php in Apache's web page root (either htdocs or D:WebPages) and add this code:

<?phpphpinfo(); ?>

Ensure Apache has started successfully, open a web browser and enter the address **http://localhost/**. If all goes well, a "PHP version" page should appear showing all the configuration settings.

WEEK #3

Basics Problems in JAVA

1#   Write a java program to add the two numbers.

2#   Write a java program to multiply two floating numbers.

3#   Write a java program to display a cube of a number .

4#   Write a Java program that takes three numbers as input to calculate and print the average of the numbers

5#   Write a Java program to compute the distance between two points

WEEK #4

Problems Based on if statement/Looping in JAVA

1# Write a java program to check whether the given number is odd or even.

2# Write a java program to find the largest number among the three numbers.

3# Write a Java program that takes a number as input and prints its multiplication table upto 10.

4# Write a Java program to calculate the sum of following series:

$$1 + 2 + 3 + 4 + ... + N$$

5# Write a Java program to take a number, divide it by 2 and print the result until the number becomes less than 10.

Problems Based on Array in JAVA

1#   Write a Java program to insert 10, 20, 30 ....in an array and display them.

2#   Write a Java program to calculate the sum of all the array elements.

3#   Write a java program to print the following pattern.

$$1$$

$$121$$

$$12321$$

$$1234321$$

$$123454321$$

4#   Write a java program to find the sum of following series where n is input by the user.

1+1/2+1/3+1/4+...............+1/n.

5#   Write a Java program and compute the sum of the digits of an integer.

6# Write a Java program to calculate the factorial of a number.

.

Problems Based on If statement/Looping/Array in JAVA

1#   Write a Java program to print the odd numbers from 1 to 99.

2#   Write a Java program to check whether a number is prime or not.

3#   Write a Java program to swap the first and last elements of an array.

4#   Write a Java program to find the maximum and minimum among array elements.

5#   Write a Java program to print all prime numbers between 0 to 100

6# Write a Java program to implement linear search.

Problems Based onHTML:

1#   Create the following table in HTML with Dummy Data:

Name of the Train	Place	Destination	Train No.	Time		Fair
				Arrival	Departure	

Problems Based on If statement/Looping/Array/Strings in JAVA

1#   Write a Java program to implement binary search.

2#   Write a Java program to arrange the elements of an array in ascending order (Sorting).

3#   Write a program to store 'Java is awesome' in a string and display it.

4#   Write a program to reverse a given string.

5#   Write a program to check whether a given string is palindrome or not.

Problems Based on HTML:

1#   Design an HTML Page having 3 images placed in the following format. (Hint: Table can be used to align images)

Image 1		
	Image 2	
		Image 3
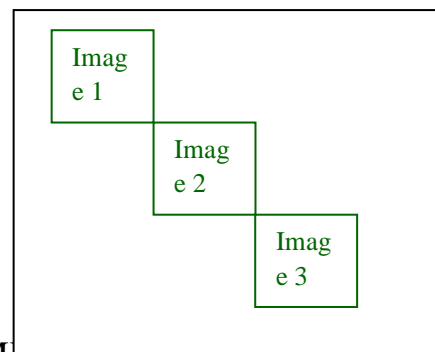
2#   Write HTML code to generate the following output:

1	2	3	4
5	Image		6
7			8
9	10	11	12

WEEK #8

Problems Based on Object / Class / Constructor in JAVA

1#   Create a class FRUIT which has data members color, taste and price. Also create a method display() which will print values of FRUIT object. Create three objects of FRUIT class and call their display() methods.

2#   Create a class FRUIT which has data members color, taste and price. It has a method setDetails() which will set the values of color, taste and price. Also create a method display() which will print values of FRUIT object.

3#   In previous question, set the values of using color, taste and price using Constructor.

4#   Add one-argument constructor and two-argument constructor in addition to default constructor in FRUIT class.

5#   Use the concept of constructor-chaining in the previous question using this().

Problems Based on HTML:

1#   Write an HTML code to develop a Web page having two frames that divide the Web page into two equal rows and then divide the second row into two equal columns, then fill each frame with a different background colour.

Problems Based on Inheritance in JAVA:

1# Create a class Vehicle, write a method cost() in this class. Create two classes Bus and Train which have their own display() methods and inherit from Vehicle class. Create objects of Bus and Train class and call cost() and display() methods.

2# Create class University which has data members- name and ranking. Create class Faculty that extends University class has data member- name and method- Details(). Create a new class Department which is derived from Faculty and has data member- name, chairman and method- Details() and Display() where Display() method calls Details() methods of both Faculty and Department class in its body. Create an object of Department class to Display() method and University ranking.

Problems Based on Static methods in JAVA

1# Create class Account (Data members- Id, Account_holder_name, Address; Methodsdeposit(), withdraw()). Create two static methods in Account calculateSimpleInterest() and calculateCompoundInterest() and implement them.

Problems Based on Abstract class in JAVA

1# Create class Account (Data members- Id, Account_holder_name, Address; Methodsdeposit(), withdraw()). Declare deposit() and withdraw() as abstract methods. Declare Account class as abstract. (Create constructor in Account as well).

2# Create two children of Account- Saving (Data Members- Min_balance; Methodsdisplay(), deposit(), withdraw()) and Current (Data Members-

Max_withdrawl_limit; Methods-display(),deposit(), withdraw()) . Create constructors for both classes. Implementation of deposit() and withdraw() should be specific to Saving and Current class. Create objects of Saving and Current class and display them.

Problems Based on HTML:

1#   Write the code to develop a Web page, as shown below, using frames:

Problems Based on Nested Class in JAVA

1# Create class Person (Data Member- name, phone). Create two member inner classes Address (Data Member- House_No, Street, City, State; Method- displayAddr()) and DateOfBirth (Data Member- Day, Month,Year; Method- displayDOB()). Display() is the method of Person class which will display name, address and date of birth of a Person object.

2# Create class Edible. Within that define two static classes Fruit and Vegetable. Fruit class will have two methods- fruitDetails() is a static method and fruitPackaging() is a non-static method. Vegetable class also has similar methods - vegetableDetails() and vegetablePackaging(). Call all the four methods from main method.

Problems Based on Static Polymorphism in JAVA:

1# Create three different minMaxAdd() methods to calculate minimum, maximum and addition of integers, real numbers and characters.

Problems Based on Dynamic Polymorphism in JAVA:

1# Create a class **ObjectOriented** which has methods- abstraction(), polymorphism() and inheritance(). Create a class **JavaLanguage** which inherits from ObjectOriented class and has its own methods- persistence() and interfaces(). Create an object of **JavaLanguage** class to access all of its own and parent's methods.

2# In previous question, create a new class **C++** which also inherits from **ObjectOriented** class and has its own methods- template() and

friendFunction().Create an object of **C++** class to access all of its own and parent's methods.

3# Create class **University** which has data members- name and ranking. Create class **Faculty** that extends **University** class has data member- name and method- Details(). Create a new class **Department** which is derived from **Faculty** and has data member- name, chairman and method- Details() and Display() where Display() method calls Details() methods of both **Faculty** and **Department** class in its body. Create an object of **Department** class to Display () method and University ranking.

Problems Based on HTML:

1# Design a page with a text box called 'name' and a button with label 'Enter. When you click on the button another page should open, with the message "Welcome <name>", where name should be equal to the name entered in the first page. Set default value of 'name' text box to Victoria. Add another button called Reset on click of this button name 'text box' should be set to 100 default values.

\

Problems Based on Interface in JAVA:

1# Create an interface **Account** having methods- deposit(), withdraw() and aboutBank() (abountBank() is a static method). Create two classes **Saving** and **Current** which implement the **Account** interface. Call the methods of **Saving** and **Current** classes in main method.

2# In the previous question, create a new method in **Account** interface- takeLoan() (takeLoan() is a default method). takeLoan() method would be implemented by **Saving** class only. Call the methods of **Saving** and **Current** classes in main method.

3# Create interfaces **Bike** and **Scooty**, both of which have two methods- offer() and details() (details() is default method). Create a new class **BuySomething** which implements both interfaces. To remove ambiguity, create a method details() in **BuySomething** class as well in which call the details() method of both interfaces. Call the methods of **BuySomething** class in main method.

Problems Based on HTML:

1# Design a form in HTML using all input types.

(A simple form accepting: Name Enrolment Number And Submit button)

2#   Design a Web Page, which is like 'compose' page of e-mail

To

Copy

Message

SEND

3#   Design a series of three HTML Pages for ABC. COM each called from the previous one. Accept Name on the first page. When the user clicks on the enter button, second page should open. The second page should not display the name but a 'Welcome screen with some information about ABC.COM. When the user will click on the 'next' button it should display the name accepted in page 1 on page 3. (Hint: you may use hidden fields)

WEEK #12

Problems Based on Java Script & HTML:

1# Write the segment of Script that would ask the user if he wants a greeting message and if he does, display a Gif file called Welcome .gif and display "Welcome to Netscape Navigator!" in the document window following the Gif.

2# Write a program to display a multiplication table.

3# Create a Web page using two image files, which switch b/w one another as the mouse pointer moves over the image. Use the On Mouse over and On Mouse out event handler.

4# Use the date function gets Date & set Date to prompt the user for an integer between 1 – 31& return day of the week it represents.

5# Display time and print message accordingly e.g., 'Good Morning' in Morning etc.

6# Using JavaScript create a digital clock.

Problems Based on Java Script & HTML:

1# Design a form as shown below:

2# Create a Website that has a questionnaire (any), on submitting, it displays the inputted data on the other page. You are supposed to use CSS (wherever necessary).

3# Create a website that divides the Web page into two unequal frames. In Frame One, there are two links to two different forms. The forms are validated on submitting and the result is shown at the bottom of the same page. Use CSS for formatting.

4# Develop a Web page with the following enhancements:

- A rollover effect, where an image changes if the user places the mouse over it.

- An animation that occurs in response to the user clicking on an image.

- A pull-down menu with each option linking to a specific page.

5# Display the calendar using JAVA SCRIPT code by getting the year from the user.

WEEK #14

Problems Based on Java Script, HTML, XML and PHP:

1# Create a HTML registration form and to validate the form using java script code.

2# Create a HTML file to open new window from the current window using JavaScript.

3# Create an HTML page with 2 combo box populated with month & year, to display the calendar for the selected month & year from combo box using javascript.

4# Create a CD catalog using XML file.

5# Create external style sheet and using the style sheet in XML file.

6# Create a XSL style sheet to display the data in the xml using HTML table.

7# Create a PHP program to demonstrate the different predefined function in array, Math, Data & Regular Expression.