Savitribai Phule Pune University

T.Y. B.C.A (Science)

Semester – V

C.B.C.S 2019 Pattern

BCA356

DSE I Lab

(Programming in Java)

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept a number from user and generate multiplication table of a number. [10 Marks]

Q2. Construct a linked List containing names of colours: red, blue, yellow and orange. Then extend the program to do the following:

i. Display the contents of the List using an Iterator

ii. Display the contents of the List in reverse order using a ListIterator

iii. Create another list containing pink and green. Insert the elements of this list between blue and yellow. [20 Marks]

OR

Q2. Write a JDBC program to display all the details of the Person table in proper format on the screen. Create and insert values in Person table with fields as PID, name, gender, birth_year in PostgreSQL database. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept 'n' integers from the user & store them in an Array List collection. Display the elements of Array List. [10 Marks]

Q2. Define a class MyNumber having one private integer data member. Write a default constructor initialize it to 0 and another constructor to initialize it to a value. Write methods isNegative, isPositive, isOdd, iseven. Use command line argument to pass a value to the object and perform the above operations. [20 Marks]

OR

Q2. Write a program to accept Doctor Name from the user and check whether it is valid or not.(It should not contain digits and special symbol) If it is not valid then throw user defined Exception - Name is Invalid -- otherwise display the name. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept the 'n' different numbers from user and store it in array. Also print the sum of elements of the array. [10 Marks]

Q2. Write a program to create class Account (accno, accname, balance). Create an array of 'n' Account objects. Define static method “sortAccount” which sorts the array on the basis of balance. Display account details in sorted order. [20 Marks]

OR

Q2. Write a program to copy the contents from one file into another file in upper case. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

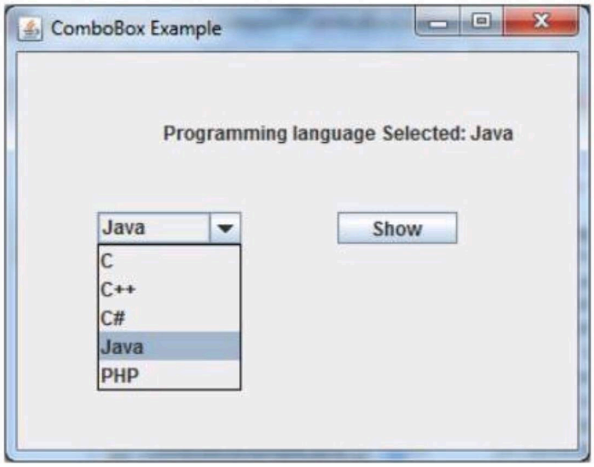
Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept the user name and greets the user by name. Before displaying the user's name, convert it to upper case letters. For example, if the user's name is Raj, then display greet message as "Hello, RAJ, nice to meet you!". [10 Marks]

Q2. Write a program which define class Product with data member as id, name and price. Store the information of 5 products and Display the name of product having minimum price (Use array of object). [20 Marks]

OR

Q2. Write a program to design following GUI using swing. On click of Show button display the selected Programming language on screen using label. [20 Marks]



Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept a number from the user, if number is zero then throw user defined exception ―Number is 0, otherwise display factorial of a number. [10 Marks]

Q2. Define a "Point" class having members – x,y (coordinates). Define default constructor and parameterized constructors. Define subclass "ColorPoint" with member as color. Write display method to display the details of Point. [20 Marks]

OR

Q2. Write a JDBC program to insert the records into the table Employee (ID, name, salary) using PreparedStatement interface. Accept details of Employees from user. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 5

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

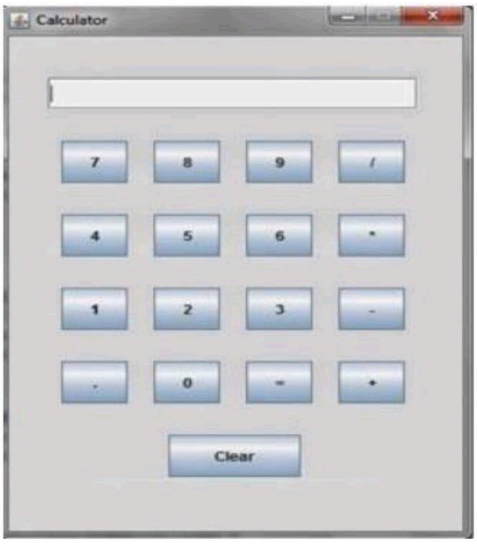
Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Accept 'n' integers from the user and store them in a collection. Display them in the sorted order. The collection should not accept duplicate elements. (Use a suitable collection). Search for a particular element using predefined search method in the Collection framework. [10 Marks]

Q2. Write a program which define class Employee with data member as id, name and salary Store the information of 'n' employees and Display the name of employee having maximum salary (Use array of object). [20 Marks]

OR

Q2. Write a program to create the following GUI using Swing components. [20 Marks]



Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Create a Hash table containing Employee name and Salary. Display the details of the hash table. [10 Marks]

Q2. Define a class student having rollno, name and percentage. Define Default and parameterized constructor. Accept the 5 student details and display it. (Use this keyword). [20 Marks]

OR

Q2. Write a program to design the following GUI using Swing components. On click of submit button check whether user has entered all the details or not. If any details are missing then display appropriate message on screen using label. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to reverse a number. Accept number using command line argument. [10 Marks]

Q2. Define a class MyDate (day, month, year) with methods to accept and display MyDate object. Accept date as dd, mm, yyyy. Throw user defined exception "InvalidDateException" ifthe date is invalid. Examples of invalid dates : 12 15 2015, 31 6 1990, 29 2 2001 [20 Marks]

OR

Q2. Create and insert values to Person table (PID, name, gender, birth_year) in postgreSQL database. Write a JDBC program to display information about the ResultSet like number of columns available in the ResultSet and SQL type of each column using ResultSetMetaData. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept a number from user. Check whether number is perfect or not. Use BufferedReader class for accepting input from user. [10 Marks]

Q2. Define a "Point" class having members – x,y(coordinates). Define default constructor and parameterized constructors. Define subclass "Point3D" with member as z (coordinate). Write display method to show the details of Point. [20 Marks]

OR

Q2. Write a program that displays the number of characters, lines and words of a file. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept a number from user. Check whether number is prime or not. [10 Marks]

Q2. Create a package "utility". Define a class CapitalString under "utility" package which will contain a method to return String with first letter capital. Create a Person class (members – name, city) outside the package. Display the person name with first letter as capital by making use of CapitalString. [20 Marks]

OR

Q2. Define a class SavingAccount (acno, name, balance). Define appropriate operations as, withdraw(), deposit(), and viewbalance(). The minimum balance must be 500. Create an object and perform operation. Raise user defined ―InsufficientFundException when balance is not sufficient for withdraw operation. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program create class as MyDate with dd,mm,yy as data members. Write parameterized constructor. Display the date in dd-mm-yy format. (Use this keyword) [10 Marks]

Q2. Create an abstract class Shape with methods area & volume. Derive a class Sphere (radius). Calculate and display area and volume. [20 Marks]

OR

Q2. Write a program to accept details of 'n' customers (c_id, cname, address, mobile_no) from user and store it in a file using DataOutputStream class. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

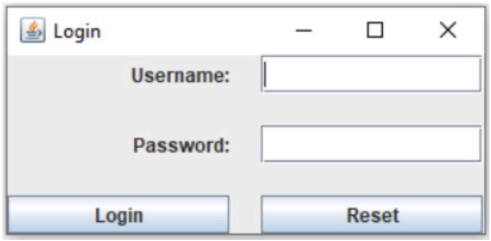
Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Create a package named "Series" having a class to print series of Square of numbers. Write a program to generate "n" terms series. [10 Marks]

Q2. Create an abstract class Shape with methods area & volume. Derive a class Cylinder (radius, height). Calculate area and volume. [20 Marks]

OR

Q2. Write a program to design a following GUI. Use appropriate Layout and Components. On click of login check whether Username and Password is "admin" or not. [20 Marks]



Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Construct a Linked List having names of Fruits: Apple, Banana, Guava and Orange. Display the contents of the List using an Iterator. [10 Marks]

Q2. Define an interface "Operation" which has methods area(),volume(). Define a constant PI having value 3.142. Create a class circle (member – radius) which implements this interface. Calculate and display the area and volume. [20 Marks]

OR

Q2. Write a class Student with attributes roll no, name, age and course. Initialize values through parameterized constructor. If age of student is not in between 15 and 21 then generate user-defined exception ―Age Not Within The Range. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to create JDBC connection. On successful connection with database display appropriate message to user. [10 Marks]

Q2. Define an interface "Operation" which has methods area(),volume(). Define a constant PI having a value 3.142. Create a class cylinder (members – radius, height) which implements this interface. Calculate and display the area and volume. [20 Marks]

OR

Q2. Write a class Student with attributes roll no, name, age and course. Initialize values through parameterized constructor. If student's roll no of is not in between 13001 to 13080 thengenerate user- defined exception ―Rollno is Not Within The Range. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Construct a Linked List having names of Fruits: Apple, Banana, Guava and Orange. Display the contents of the List in reverse order using an appropriate interface. [10 Marks]

Q2. Write a program to create a super class Employee (members – name, salary). Derive a sub- class as Developer (member – projectname). Create object of Developer and display the detailsof it. [20 Marks]

OR

Q2. Design a servlet to display message as "Welcome IP address of client" to visitor. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Define a class MyNumber having one private integer data member. Write a parameterized constructor to initialize to a value. Write isEven() to check given number is even or not. Use command line argument to pass a value to the object. [10 Marks]

Q2. Write a program to create a super class Employee (members – name, salary). Derive a sub- class Programmer (member – proglanguage). Create object of Programmer and display the details of it. [20 Marks]

OR

Q2. Write a JDBC program to update number_of_students of "BCA Science" to 1000. Create a table Course (Code,name, department,number_of_students) in PostgreSQL database. Insertvalues in the table. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Define a class MyNumber having one private integer data member. Write a parameterized constructor to initialize to a value. Write isOdd() to check given number is odd or not. Use command line argument to pass a value to the object. [10 Marks]

Q2. Define a class Student with attributes rollno and name. Define default and parameterized constructor. Keep the count of Objects created. Create objects using parameterized constructor and Display the object count after each object is created. [20 Marks]

OR

Q2. Write a JSP program to perform Arithmetic operations such as Addition and Subtraction. Design a HTML to accept two numbers in text box and radio buttons to display operations. On submit display result as per the selected operation on next page using JSP. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to print the factors of a number. Accept a number using command line argument. [10 Marks]

Q2. Write a program to read the contents of "abc.txt" file. Display the contents of file in uppercase as output. [20 Marks]

OR

Q2. Write a program to design following screen using swing components [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept the 'n' different numbers from user and store it in array. Display maximum number from an array. [10 Marks]

Q2. Create an abstract class “order” having members id, description. Create a subclass “Purchase Order” having member as customer name. Define methods accept and display. Create 3 objects each of Purchase Order. Accept and display the details. [20 Marks]

OR

Q2. Write a servlet program to display current date and time of server. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 356: DSE I Lab (Programming in Java)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a program to accept 3 numbers using command line argument. Sort and display the numbers. [10 Marks]

Q2. Create an employee class (id,name,deptname,salary). Define a default and parameterized constructor. Use 'this' keyword to initialize instance variables. Keep a count of objects created. Create objects using parameterized constructor and display the object count after each object is created. Also display the contents of each object. [20 Marks]

OR

Q2. Write a JSP program to perform Arithmetic operations such as Multiplication and Divison. Design a HTML to accept two numbers in text box and radio buttons to display operations. On submit display result as per the selected operation on next page using JSP. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A (Science)

Semester – V

C.B.C.S 2019 Pattern

BCA357

DSE II Lab

(Data Mining)

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1.Write a R program to add, multiply and divide two vectors of integertype. (Vector length should be minimum 4) [10 Marks]

Q2.Consider the student data set. It can be downloaded from: https://drive.google.com/open?id=1oakZCv7g3mlmCSdv9J8kdSaqO 5_6dIOw . Write a programme in python to apply simple linear regression and find out mean absolute error, mean squared error and root mean squared error. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write an R program to calculate the multiplication table using afunction. [10 Marks]

Q2. Write a python program to implement k-means algorithms on asynthetic dataset. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 2

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to reverse a number and also calculate the sum ofdigits of that number. [10 Marks]

Q2. Consider the following observations/data. And apply simple linear regression and find out estimated coefficients b0 and b1.(use numpypackage)

x=[0,1,2,3,4,5,6,7,8,9,11,13]

y = ([1, 3, 2, 5, 7, 8, 8, 9, 10, 12,16, 18] [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 3

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to calculate the sum of two matrices of given size. [10 Marks]

Q2. Consider following dataset

weather=['Sunny','Sunny','Overcast','Rainy','Rainy','Rainy','Overcast','Sunny','Sunny','Rainy','Sunny','Overcast','Overcast','Rainy']

temp=['Hot','Hot','Hot','Mild','Cool','Cool','Cool','Mild','Cool','Mild','Mild','Mild','Hot','Mild']

play=['No','No','Yes','Yes','Yes','No','Yes','No','Yes','Yes','Yes','Yes','Yes','No'].

Use Naïve Bayes algorithm to predict [0: Overcast, 2: Mild]tuple belongs to which class whether to play the sports or not.

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 4

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to concatenate two given factors. [10 Marks]

Q2. Write a Python program build Decision Tree Classifier using Scikit- learn package for diabetes data set (download database from https://www.kaggle.com/uciml/pima-indians-diabetes-database)

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 5

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a data frame using two given vectors and displaythe duplicate elements. [10 Marks]

Q2. Write a python program to implement hierarchical Agglomerative clusteringalgorithm. (Download Customer.csv dataset from github.com). [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 6

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a sequence of numbers from 20 to 50 and findthe mean of numbers from 20 to 60 and sum of numbers from 51 to 91.

[10 Marks]

Q2. Consider the following observations/data. And apply simple linear regression and find out estimated coefficients b1 and b1 Also analyse theperformance of the model

(Use sklearn package)

```
x = np.array([1,2,3,4,5,6,7,8])
y = np.array([7,14,15,18,19,21,26,23])
```

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 7

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to get the first 10 Fibonacci numbers. [10 Marks]

Q2. Write a python program to implement k-means algorithm to build prediction model (Use Credit Card Dataset CC GENERAL.csv Download from kaggle.com) [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 8

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write an R program to create a Data frames which contain details of 5 employees and display summary of the data. [10 Marks]

Q2. Write a Python program to build an SVM model to Cancer dataset. The dataset is available in the scikit-learn library. Check the accuracyof model with precision and recall. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 9

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to find the maximum and the minimum value of a givenvector [10 Marks]

Q2. Write a Python Programme to read the dataset ("Iris.csv"). dataset download from (https://archive.ics.uci.edu/ml/datasets/iris) and apply Apriori algorithm. [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 10

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to find all elements of a given list that are not inanother given list.

```
AB st("x", "y", "z")
   st("X", "Y", "Z", "x", "y", "z")
```

[10 Marks]

Q2. Write a python program to implement hierarchical clustering algorithm.(Download Wholesale customers data dataset from github.com).

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 11

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a Dataframes which contain details of 5employees and display the details.

Employee contain (empno,empname,gender,age,designation)

[10 Marks]

Q2. Write a python program to implement multiple Linear Regression modelfor a car dataset. Dataset can be downloaded from:
https://www.w3schools.com/python/python_ml_multiple_regression.asp

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 12

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Draw a pie chart using R programming for the following datadistribution:

Digits on Dice	1	2	3	4	5	6
Frequency of getting each number	7	2	6	3	4	8

[10 Marks]

Q2. Write a Python program to read "StudentsPerformance.csv" file. Solvefollowing:

- To display the shape of dataset.

- To display the top rows of the dataset with their columns.Note: Download dataset from following link :

(https://www.kaggle.com/spscientist/students-performance-inexams?select=StudentsPerformance.csv) [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a script in R to create a list of employees (name) and perform thefollowing:

a. Display names of employees in the list.

b. Add an employee at the end of the list

c. Remove the third element of the list. [10 Marks]

Q2. Write a Python Programme to apply Apriori algorithm on Groceries dataset. Dataset can be downloaded from (https://github.com/amankharwal/Websitedata/blob/master/Groceries_dataset.csv).

Also display support and confidence for each rule.

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 14

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1.Write a R program to add, multiply and divide two vectors of integer type.(vector length should be minimum 4) [10 Marks]

Q2. Write a Python program build Decision Tree Classifier for shows.csvfrom pandas and predict class label for show starring a 40 years old American comedian, with 10 years of experience, and a comedy ranking of 7? Create a csv file as shown in https://www.w3schools.com/python/python_ml_decision_tree.asp

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a simple bar plot of given data

Year	Export	Import
2001	26	35
2002	32	40
2003	35	50

[10 Marks]

Q2. Write a Python program build Decision Tree Classifier using Scikit-learnpackage for diabetes data set (download database from https://www.kaggle.com/uciml/pima-indians-diabetes-database)

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to get the first 20 Fibonacci numbers.

[10 Marks]

Q2. Write a python programme to implement multiple linear regression modelfor stock market data frame as follows:

```
Stock_Market = {'Year':
[2017,2017,2017,2017,2017,2017,2017,2017,2017,2017,2017,2016,2
016,20,16,2016,2016,2016,2016,2016,2016,2016,2016,2016],
'Month': [12, 11,10,9,8,7,6,5,4,3,2,1,12,11,10,9,8,7,6,5,4,3,2,1],
'Interest_Rate': [2.75,2.5,2.5,2.5,2.5,2.5,2.5,2.25,2.25,2.25,2,2,2,1.75,1.75,1.75,1.75,1.75,1
.75,1.75,1.75,1.75,1.75,1.75],
'Unemployment_Rate':
[5.3,5.3,5.3,5.3,5.4,5.6,5.5,5.5,5.5,5.6,5.7,5.9,6,5.9,5.8,6.1,6.2,6.1,6.1,6.1,5
.9,6.2,6.2,6.1],
'Stock_Index_Price': [1464,1394,1357,1293,1256,1254,1234,1195,1159,1167,1130,1075,1047,
965,943,958,971,949,884,866,876,822,704,719] }
```

And draw a graph of stock market price verses interest rate.

[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to find the maximum and the minimum value of a givenvector [10 Marks]

Q2. Consider the following observations/data. And apply simple linear regression and find out estimated coefficients b1 and b1 Also analyse theperformance of the model

(Use sklearn package)

x = np.array([1,2,3,4,5,6,7,8])

y = np.array([7,14,15,18,19,21,26,23]) [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 18

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a Dataframes which contain details of 5 Studentsand display the details.

Students contain (Rollno,Studname,Address,Marks) [10 Marks]

Q2. Write a python program to implement multiple Linear Regression modelfor a car dataset. Dataset can be downloaded from:
https://www.w3schools.com/python/python_ml_multiple_regression.asp
[20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 19

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 357: DSE II Lab (Data Mining)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q1. Write a R program to create a data frame from four given vectors. [10 Marks]

Q2. Write a python program to implement hierarchical Agglomerativeclustering algorithm. (Download Customer.csv dataset from github.com). [20 Marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 20

Savitribai Phule Pune University

T.Y. B.C.A (Science)

Semester – V

C.B.C.S 2019 Pattern

BCA358

DSE III Lab

(Operating Systems and AI)

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program that demonstrates the use of nice() system call. After a child process is started using fork(), assign higher priority to the child using nice() system call. [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n=3 as the number of memory frames.

Reference String :3, 4, 5, 6, 3, 4, 7, 3, 4, 5, 6, 7, 2, 4, 6

Implement FIFO [20 marks]

OR

Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance. Consider the following snapshot of system, A, B, C and D are the resource type.

	ALLOCATION				MAX			
	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2
P1	1	0	0	0	1	7	5	0
P2	1	3	5	4	2	3	5	6
P3	0	6	3	2	0	6	5	2
P4	0	0	1	4	0	6	5	6

AVAILABLE			
A	B	C	D
1	5	2	0

a) Calculate and display the content of need matrix?

b) Is the system in safe state? If display the safe sequence.

c) If a request from process P arrives for (0, 4, 2, 0) can it be granted immediately by keeping the system in safe state. Print a message [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Create a child process using fork(), display parent and child process id. Child process will display the message "Hello World" and the parent process should display "Hi".
[10 marks]

Q.2 Write the simulation program using SJF (non-preemptive). The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times.[20 marks]

OR

Partially implement the Menu driven Banker's algorithm for accepting Allocation, Max from user.

a) Accept Available

b) Display Allocation, Max

c) Find Need and display It,

d) Display Available Consider the system with 3 resources types A,B, and C with 7,2,6 instances respectively.

Consider the following snapshot:

	ALLOCATION	REQUEST	TOTAL RESOURCES
p0	0 1 0	0 0 0	7 2 6
p1	2 0 0	2 0 0	
p2	3 0 3	0 0 1	
p3	2 1 1	1 0 0	
p4	0 0 2	0 0 2	

Answer the following questions:

a) Display the contents of Available array?

b) Is there any deadlock? Print the message [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q. 1 Creating a child process using the command exec(). Note down process ids of the parent and the child processes, check whether the control is given back to the parent after the child process terminates. [10 marks]

Q.2 Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart,Turnaround Time and Waiting time for each process and average times. [20 marks]

OR

Q.2 Given an initial state of a 8-puzzle problem and final state to be reached

2	8	3
1	6	4
7		5

Initial State

1	2	3
8		4
7	6	5

Final State

Find the most cost-effective path to reach the final state from initial state using A* Algorithm in C/Python. [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to illustrate the concept of orphan process (Using fork() and sleep()) [10 marks]

Q.2 Write the program to simulate Non-preemptive Priority scheduling. The arrival time and first CPU burst and priority for different n number of processes should be input to the algorithm. Assume the fixed IO waiting time (2 units). The next CPU-burst should be generated randomly. The output should give Gantt chart, turnaround time and waiting time for each process. Also find the average waiting time and turnaround time.. [20 marks]

OR

Q.2 Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance. Consider the following snapshot of system, A, B, C and D are the resource type.

	ALLOCATION				MAX			
	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2
P1	1	0	0	0	1	7	5	0
P2	1	3	5	4	2	3	5	6
P3	0	6	3	2	0	6	5	2
P4	0	0	1	4	0	6	5	6

AVAILABLE			
A	B	C	D
1	5	2	0

a) Calculate and display the content of need matrix?

b) Is the system in safe state? If display the safe sequence.

c) If a request from process P arrives for (0, 4, 2, 0) can it be granted immediately by keeping the system in safe state. Print a message [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program that demonstrates the use of nice () system call. After a child process is started using fork (), assign higher priority to the child using nice () system call. [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames. Reference String: 3, 4, 5, 6, 3, 4, 7, 3, 4, 5, 6, 7, 2, 4, 6

i. Implement FIFO [20 marks]

OR

Q.2 partially implement the Menu driven Banker's algorithm for accepting Allocation, Max from user.

a) Accept Available

b) Display Allocation, Max

c) Find Need and display It,

d) Display Available Consider the system with 3 resources types A,B, and C with 7,2,6 instances respectively.

Consider the following snapshot:

	ALLOCATION	REQUEST	TOTAL RESOURCES
p0	0 1 0	0 0 0	7 2 6
p1	2 0 0	2 0 0	
p2	3 0 3	0 0 1	
p3	2 1 1	1 0 0	
p4	0 0 2	0 0 2	

Answer the following questions:

a) Display the contents of Available array?

b) Is there any deadlock? Print the message [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 5

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to find the execution time taken for execution of a given set of instructions (use clock() function) [10 marks]

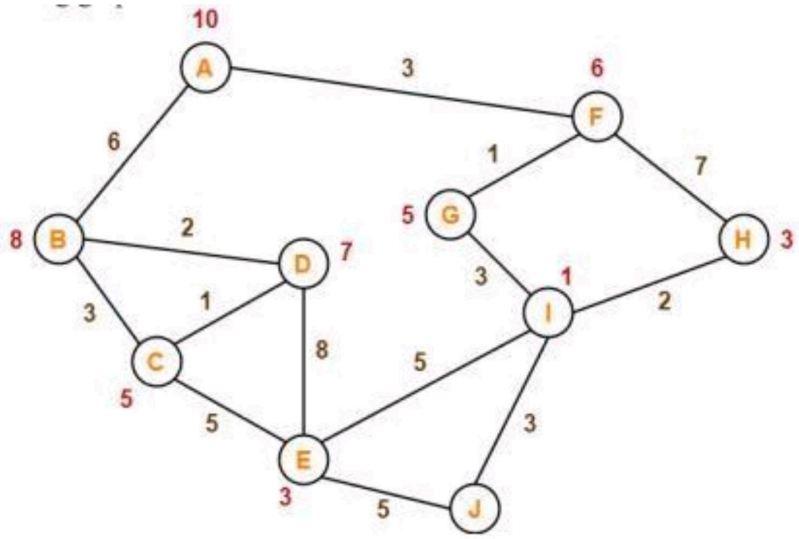
Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.

Reference String :3, 4, 5, 6, 3, 4, 7, 3, 4, 5, 6, 7, 2, 4, 6

Implement FIFO [20 marks]

OR

Q.2 Consider the following graph



The numbers written on edges represent the distance between the nodes.

The numbers written on nodes represent the heuristic value.

Implement A* algorithm in C/Python for above graph and find out most cost-effective path from A to J. [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to create a child process using fork().The parent should goto sleep state and child process should begin its execution. In the child process, use execl() to execute the "ls" command. [10 marks]

Q.2 Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times [20 marks]

OR

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.

Reference String: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2

i. Implement LRU [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 7

Savitribai Phule Pune University

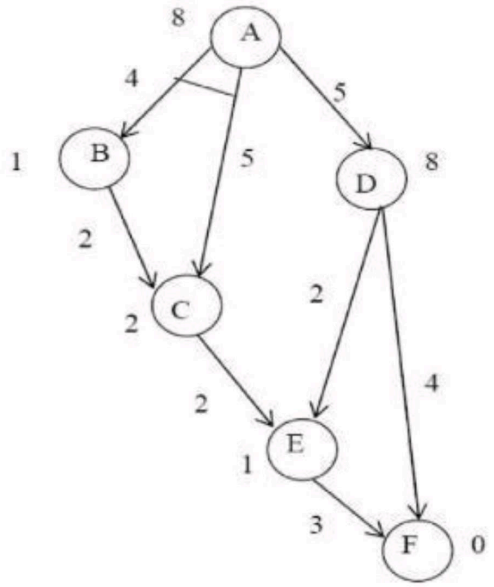
T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a C program to accept the number of process and resources and find the need matrix content and display it. [10 marks]

Q.2 Implement AO* algorithm in C /python for following graph and find out minimum cost solution.



[20 marks]

OR

Q.2. Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n =3 as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

Implement OPT [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Slip 8

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to create a child process using fork().The parent should goto sleep state and child process should begin its execution. In the child process, use execl() to execute the "ls" command. [10 marks]

Q.2 Partially implement the Menu driven Banker's algorithm for accepting Allocation, Max from user.

a) Accept Available

b) Display Allocation, Max

c) Find Need and display It,

d) Display Available Consider the system with 3 resources types A,B, and C with 7,2,6 instances respectively.

Consider the following snapshot:

	ALLOCATION	REQUEST	TOTAL RESOURCES
p0	0 1 0	0 0 0	7 2 6
p1	2 0 0	2 0 0	
p2	3 0 3	0 0 1	
p3	2 1 1	1 0 0	
p4	0 0 2	0 0 2	

[20 marks]

OR

Q.2 Write the program to simulate Round Robin (RR) scheduling. The arrival time and first CPU-burst for different n number of processes should be input to the algorithm. Also give the time quantum as input. Assume the fixed IO waiting time (2 units). The next CPU-burst should be generated randomly. The output should give Gantt chart, turnaround time and waiting time for each process. Also find the average waiting time and turnaround time. [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to illustrate the concept of orphan process (Using fork() and sleep()) [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n=3 as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

Implement OPT [20 marks]

OR

Q.2 Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20 marks]

Q3. Viva [5 Marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Create a child process using fork(), display parent and child process id. Child process will display the message "Hello World" and the parent process should display "Hi".

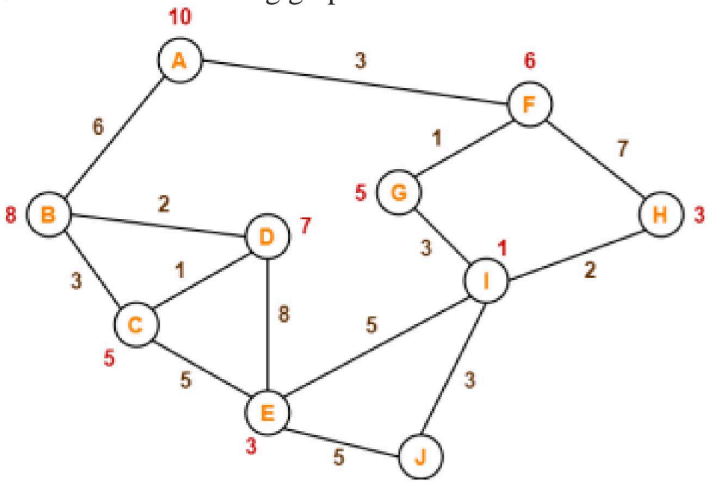
[10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.
Reference String: 0, 2, 1, 6, 4, 0, 1, 0, 3, 1, 2, 1

Implement FIFO [20 marks]

OR

Consider the following graph



The numbers written on edges represent the distance between the nodes.
The numbers written on nodes represent the heuristic value.
Implement A* algorithm in C/Python for above graph and find out most cost-effective path from A to J. [20 marks]

Q.3 Viva
[5marks]
Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 [10] Write a program to illustrate the concept of orphan process (Using fork() and sleep()) . [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string.

Give input n as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

Implement OPT [20 marks]

OR

Q2. Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20 marks]

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program that demonstrates the use of nice() system call. After a child process is started using fork(), assign higher priority to the child using nice() system call. [10 marks]

Q.2 Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance. Consider the following snapshot of system, A, B, C and D are the resource type.

	ALLOCATION				MAX			
	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2
P1	1	0	0	0	1	7	5	0
P2	1	3	5	4	2	3	5	6
P3	0	6	3	2	0	6	5	2
P4	0	0	1	4	0	6	5	6

AVAILABLE			
A	B	C	D
1	5	2	0

a) Calculate and display the content of need matrix?

b) Is the system in safe state? If display the safe sequence.

c) If a request from process P arrives for (0, 4, 2, 0) can it be granted immediately by keeping the system in safe state. Print a message. [20 marks]

OR

Write the simulation program using SJF(non-preemptive). The arrival time and first CPU bursts of different jobs should be input to the system. The Assume the fixed I/O waiting time (2 units).Thenext CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20 marks]

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

Slip 13

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to find the execution time taken for execution of a given set of instructions (use clock() function) [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n =3 as the number of memory frames.

Reference String : 0, 2, 1, 6, 4, 0, 1, 0, 3, 1, 2, 1

Implement FIFO [20 marks]

OR

Write the simulation program using SJF(non-preemptive). The arrival time and first CPU bursts of different jobs should be input to the system. The Assume the fixed I/O waiting time (2 units).Thenext CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20 marks]

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

Slip 14

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to create a child process using fork().The parent should goto sleep state and child process should begin its execution. In the child process, use execl() to execute the "ls" command.

[10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.

Reference String :7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2

Implement LRU [20 marks]

OR

Write the program to simulate Preemptive Shortest Job First (SJF) -scheduling. The arrival time and first CPU-burst for different n number of processes should be input to the algorithm. Assumethe fixed IO waiting time (2 units). The next CPU-burst should be generated randomly. The outputshould give Gantt chart, turnaround time and waiting time for each process. Also find the averagewaiting time and turnaround time. [20marks]

Q3. Viva [5marks]

Q4. Internal Assessment [15 Marks]

Slip 15

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to find the execution time taken for execution of a given set of instructions (use clock()
function) [10 marks]

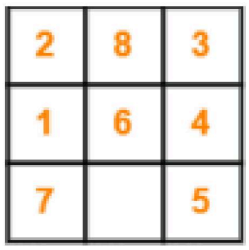
Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n =3 as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

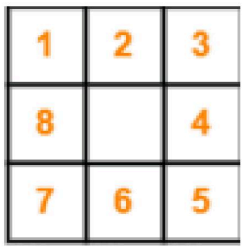
Implement OPT [20 marks]

OR

Given an initial state of a 8-puzzle problem and final state to be reached



Initial State



Final State

Find the most cost-effective path to reach the final state from initial state using A* Algorithm in C/Python.
Consider g(n) = Depth of node and h(n) = Number of misplaced tiles. [20 marks]

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write the program to calculate minimum number of resources needed to avoid deadlock. [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n=3 as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

Implement OPT [20 marks]

OR

Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20 marks]

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

Slip 17

Savitribai Phule Pune University

T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q. 1 Write a C program to accept the number of process and resources and find the need matrix content and display it. [10 marks]

Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.

Reference String : 12,15,12,18,6,8,11,12,19,12,6,8,12,15,19,8

Implement OPT [20 marks]

OR

Write the simulation program using SJF (non-preemptive). The arrival time and first CPU bursts of different jobs should be input to the system. The Assume the fixed I/O waiting time (2 units).Thenext CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times. [20marks]

Q.3 Viva [5marks]

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T.Y. B.C.A. (Science) (Semester-V) Practical Examination

BCA 358: DSE III Lab (Operating Systems and AI)

Duration: 3Hrs. **Max Marks: 35+15=50**

Q.1 Write a program to create a child process using fork().The parent should goto sleep state and child process should begin its execution. In the child process, use execl() to execute the "ls" command. [10 marks]

Q.2 Write the program to simulate Non-preemptive Priority scheduling. The arrival time and first CPU burst and priority for different n number of processes should be input to the algorithm. Assume the fixed IO waiting time (2 units). The next CPU-burst should be generated randomly. The output should give Gantt chart, turnaround time and waiting time for each process. Also find the average waiting time and turnaround time. [20 marks]

OR

Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance. Consider the following snapshot of system, A, B, C and D are the resource type.

	ALLOCATION				MAX			
	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2
P1	1	0	0	0	1	7	5	0
P2	1	3	5	4	2	3	5	6
P3	0	6	3	2	0	6	5	2
P4	0	0	1	4	0	6	5	6

AVAILABLE			
A	B	C	D
1	5	2	0

a) Calculate and display the content of need matrix?

b) Is the system in safe state? If display the safe sequence.

c) If a request from process P arrives for (0, 4, 2, 0) can it be granted immediately by keeping the system in safe state. Print a message [20 marks]

Q.3 Viva [5marks]

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Q.2 Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n=3 as the number of memory frames.

Reference String : 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2

i. Implement LRU [20 marks]

OR

[20 marks]

Write the simulation program using FCFS. The arrival time and first CPU bursts of different jobs should be input to the system. Assume the fixed I/O waiting time (2 units). The next CPU burst should be generated using random function. The output should give the Gantt chart, Turnaround Time and Waiting time for each process and average times.

Q.3 Viva [5marks]

Q4. Internal Assessment [15 Marks]

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