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SP18-bse-119

BSE-3B

Lab 3 Tasks

Object Oriented Programming

# Task1:

*package* com.raiayy;  
  
*public class* Circle {  
 *final double* PI = 3.14159265359;  
 *double* radius;  
 *public void* setParameters(*double* a ){  
 radius = a;  
 }  
 *public void* display(){  
 System.out.println("Radius = "+ radius);  
 System.out.println("Value of PI is "+ PI);  
 }  
 *public double* calculateCircumference(){  
 *double* circumference = 2\*PI\*radius;  
 *return* circumference;  
 }  
 *public double* calculateArea(){  
 *double* area = PI\*(radius\*radius);  
 *return* area;  
 }  
  
}

Runner

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Circle c1 = *new* Circle();  
 String x = JOptionPane.*showInputDialog*("Enter Your Radius Here: ");  
 *double* y = Double.*parseDouble*(x);  
 c1.setParameters(y);  
 c1.display();  
 System.out.println(c1.calculateArea());  
 System.out.println(c1.calculateCircumference());  
  
 }  
}

# Task 2:

*package* com.raiayy;  
  
*public class* Rectangle {  
 *int* length, width;  
  
 *public void* setParameters(*int* a, *int* b) {  
 length = a;  
 width = b;  
 }  
  
 *public void* display() {  
 System.out.println("Length = " + length + " Width = " + width);  
 }  
  
 *public int* calculateArea() {  
 *int* area = length \* width;  
 *return* area;  
 }  
  
 *public void* checkSquare() {  
 *if* (length == width)  
 System.out.println("It is a Square.");  
 *else* System.out.println("It is not a square.");  
  
 }  
  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Rectangle r1 = *new* Rectangle();  
 String a = JOptionPane.*showInputDialog*("Enter Length: ");  
 String b = JOptionPane.*showInputDialog*("Enter width: ");  
 *int* p = Integer.*parseInt*(a);  
 *int* q = Integer.*parseInt*(b);  
 r1.setParameters(p, q);  
 r1.display();  
 System.out.println("Area" + r1.calculateArea());  
 r1.checkSquare();  
 }  
}

# Task 3:

*package* com.raiayy;  
  
*public class* Account {  
 *int* balance;  
 *int* yesrOfOpening;  
 String CNIC;  
  
 *public void* setParameters(*int* a, *int* b, String c) {  
 balance = a;  
 yesrOfOpening = b;  
 CNIC = c;  
 }  
  
 *public void* display() {  
 System.out.println("Balance = " + balance);  
 System.out.println("Year of Opening is: " + yesrOfOpening);  
 System.out.println("CNIC + " + CNIC);  
 }  
  
 *public void* withdraw(*int* remove) {  
 *if* (balance < remove)  
 System.out.println("Balance is lower than requested amount");  
 *else* {  
 balance = balance - remove;  
 System.out.println(remove + " is withdrawn, updated balance is: " + balance);  
 }  
 }  
  
 *public void* deposit(*int* add) {  
 balance = balance + add;  
 System.out.println(add + "is deposited Successful, new balance is: " + balance);  
 }  
  
 *public boolean* validCNIC() {  
 *boolean* bool;  
 *if* (CNIC.length() == 13) {  
 bool = *true*;  
 } *else* bool = *false*;  
 *return* bool;  
 }  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Account a1 = *new* Account();  
 String a = JOptionPane.*showInputDialog*("Enter Balance: ");  
 String b = JOptionPane.*showInputDialog*("Enter Year of Opening: ");  
 String c = JOptionPane.*showInputDialog*("Enter CNIC #: ");  
 *int* p = Integer.*parseInt*(a);  
 *int* q = Integer.*parseInt*(b);  
 a1.setParameters(p, q, c);  
 a1.display();  
 String d = JOptionPane.*showInputDialog*("Enter Amount to Withdraw: ");  
 *int* w = Integer.*parseInt*(d);  
 a1.withdraw(w);  
 String e = JOptionPane.*showInputDialog*("Enter Amount to Deposit: ");  
 *int* dep = Integer.*parseInt*(e);  
 a1.deposit(dep);  
 System.out.println("Enterd CNIC is : " + a1.validCNIC());  
 }  
}

# Task 4:

*package* com.raiayy;  
  
*public class* Marks {  
 *int* subOne, subTwo, subThree;  
  
 *public void* setParameters(*int* a, *int* b, *int* c) {  
 subOne = a;  
 subTwo = b;  
 subThree = c;  
  
 }  
  
 *public void* display() {  
 System.out.println("Marks of Subjects are as follows-> Sub1: " + subOne + " " +  
 "Sub 2: " + subTwo + " Sub 3: " + subThree);  
 }  
  
 *public int* sum() {  
 *int* sum = subOne + subTwo + subThree;  
 *return* sum;  
 }  
  
 *public double* percentage() {  
 *double* totalPercentage = (((subOne + subTwo + subThree) / 3) \* 100) / 100;  
 *return* totalPercentage;  
 }  
  
 *public void* checkFail() {  
 *double* totalPercentage = (((subOne + subTwo + subThree) / 3) \* 100) / 100;  
 *if* (totalPercentage < 40) {  
 System.out.println("Candidate Failed :-( ");  
 } *else* {  
 System.out.println("Candidate Passed the Exam :-) ");  
 }  
 }  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Marks m1 = *new* Marks();  
 String a = JOptionPane.*showInputDialog*("Marks of Subject 1: ");  
 String b = JOptionPane.*showInputDialog*("Marks of Subject 2: ");  
 String c = JOptionPane.*showInputDialog*("Marks of Subject 3: ");  
 *int* p = Integer.*parseInt*(a);  
 *int* q = Integer.*parseInt*(b);  
 *int* r = Integer.*parseInt*(c);  
  
 m1.setParameters(p, q, r);  
  
 m1.display();  
  
 System.out.println(m1.sum());  
 System.out.println(m1.percentage());  
 m1.checkFail();  
 }  
}

# Task 5:

*package* com.raiayy;  
  
*public class* Point {  
 *double* x, y;  
  
 *public void* setParameters(*double* a, *double* b){  
 x = a;  
 y = b;  
 }  
 *public void* display(){  
 System.out.println("X = " +x+ " Y ="+y);  
 }  
 *public void* move(*double* c, *double* d){  
 x = c;  
 y = d;  
 System.out.println("Point moved at: "+x+" "+y);  
 }  
 *public boolean* checkOrigin(){  
 *boolean* bool;  
 *if* (x==0 && y==0){  
 bool = *true*;  
 }  
 *else* {  
 bool = *false*;  
 }  
 *return* bool;  
 }  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Point p1 = *new* Point();  
 String a = JOptionPane.*showInputDialog*("Enter Initial X: ");  
 String b = JOptionPane.*showInputDialog*("Enter Initial Y: ");  
 *double* c = Double.*parseDouble*(a);  
 *double* d = Double.*parseDouble*(b);  
 p1.setParameters(c, d);  
 p1.display();  
 String p = JOptionPane.*showInputDialog*("Enter X to move: ");  
 String q = JOptionPane.*showInputDialog*("Enter Y to move: ");  
 *double* r = Double.*parseDouble*(p);  
 *double* s = Double.*parseDouble*(q);  
 p1.move(r, s);  
 p1.checkOrigin();  
  
 }  
}

# Task 6:

*package* com.raiayy;  
  
*public class* Book {  
 String author;  
 String[] chapterNames = *new* String[5];  
  
 *public void* setParameters(String a, String[] b) {  
 author = a;  
 *for* (*int* i = 0; i < chapterNames.length; i++) {  
 chapterNames[i] = b[i];  
 }  
 }  
 *public void* display(){  
 System.out.println("Author Name is: "+author);  
 System.out.println("Chapters of the Book are as follows: ");  
 *for* (*int* i = 0; i< chapterNames.length; i++){  
 System.out.println(chapterNames[i]);  
 }  
 }  
 *public void* checkIfAuthorName(){  
 *if* (author.startsWith("A")){  
 System.out.println("Author's Name Start with 'A'.");  
 }  
 *else* System.out.println("Author's Name doesn't start with 'A'. ");  
 }

*public boolean* searchChapter(String s) {  
 *boolean* bool = *false*;  
 *for* (*int* i = 0; i < chapterNames.length; i++) {  
 *if* (s.equals(subjects[i])) {  
 bool = *true*;  
 *break*;  
 } *else* bool = *false*;  
 }  
 *return* bool;  
}  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Book b1 = *new* Book();  
 String[] myarray = *new* String[5];  
 String a = JOptionPane.*showInputDialog*("Enter Author Name: ");  
 *for* (*int* i = 0; i < b1.chapterNames.length; i++) {  
 myarray[i] = JOptionPane.*showInputDialog*("Enter Chapter No. " + (i + 1) + " Name: ");  
 }  
 b1.setParameters(a, myarray);  
 b1.display();  
 b1.checkIfAuthorName();  
 }  
}

Task 7:

*package* com.raiayy;  
  
*import* java.util.regex.Matcher;  
*import* java.util.regex.Pattern;  
  
*public class* Student {  
 *double* GPA;  
 String[] subjects = *new* String[5];  
 String email;  
  
 *public void* setParameters(*double* a, String[] b, String c) {  
 GPA = a;  
  
 *for* (*int* i = 0; i < subjects.length; i++) {  
 subjects[i] = b[i];  
 }  
 email = c;  
 }  
  
 *public void* display() {  
 System.out.println(GPA);  
 System.out.println("Registered courses of Student are as follows: ");  
 *for* (*int* i = 0; i < subjects.length; i++) {  
 System.out.print(" " + subjects[i]);  
 }  
 System.out.println(email);  
 }  
  
 *public boolean* searchSubject(String s) {  
 *boolean* bool = *false*;  
 *for* (*int* i = 0; i < subjects.length; i++) {  
 *if* (s.equals(subjects[i])) {  
 bool = *true*;  
 *break*;  
 } *else* bool = *false*;  
 }  
 *return* bool;  
 }  
  
 *public void* checkProbStatus() {  
 *if* (GPA < 2) {  
 System.out.println("Student is on Probation");  
 } *else* {  
 System.out.println("Good Academic Standings");  
 }  
 }  
  
 *public void* validateEmail(String emailStr) {  
 Matcher matcher = Pattern.*compile*("^[A-Z0-9.\_%+-]+@[A-Z0-9.-]+\\.[A-Z]{2,6}$",  
 Pattern.CASE\_INSENSITIVE).matcher(emailStr);  
 *if* (matcher.find()) {  
 System.out.println("The given email is valid");  
 } *else* {  
 System.out.println("The given email is invalid");  
 }  
 }  
}

Runner:

*package* com.raiayy;  
  
*import* javax.swing.\*;  
  
*public class* Main {  
  
 *public static void* main(String[] args) {  
 Student s1 = *new* Student();  
 String[] myarray = *new* String[5];  
 String a = JOptionPane.*showInputDialog*("Enter GPA: ");  
 String b = JOptionPane.*showInputDialog*("Enter Email Address: ");  
 *double* gp = Double.*parseDouble*(a);  
 *for* (*int* i = 0; i < s1.subjects.length; i++) {  
 myarray[i] = JOptionPane.*showInputDialog*("Enter Chapter No. " + (i + 1) + " Name: ");  
 }  
 s1.setParameters(gp, myarray, b);  
 s1.searchSubject("Intro");  
 s1.checkProbStatus();  
 s1.display();  
 s1.validateEmail(b);  
 }  
}

GitHub Link: https://github.com/RaiAnsar/ThirdSemester-OOPLabs