***1.write a java program using user define pacakage***

**package** maths;

**public** **class** Addition {

**private** **int** a,b,c;

**public** Addition(**int** a,**int** b)

{

**this**.a=a;

**this**.b=b;

}

**public** **void** calAdd()

{

c=a+b;

System.***out***.println("Add = "+c);

}

}

**package** maths;

**public** **class** Maximum {

**private** **int** a,b,c;

**public** Maximum(**int** a,**int** b)

{

**this**.a=a;

**this**.b=b;

}

**public** **void** calMax()

{

c=(a>b)?a:b;

System.***out***.println("Max="+c);

}

}

**package** maths;

**import** java.util.\*;

**public** **class** Pack {

**public** **static** **void** main(String[] args) {

**int** a,b,n,i;

Scanner sc =**new** Scanner(System.***in***);

System.***out***.println("Enter size");

n=sc.nextInt();

Addition a1[]=**new** Addition[n];

**for**( i=0;i<n;i++)

{

System.***out***.println("Enter 2 numbers");

a=sc.nextInt();

b=sc.nextInt();

a1[i]=**new** Addition(a, b);

a1[i].calAdd();

}

System.***out***.println("Enter 2 numbers");

a=sc.nextInt();

b=sc.nextInt();

Maximum m1=**new** Maximum(a, b);

m1.calMax();

}

}

***Output:***

Enter size

2

Enter 2 numbers

2

3

Add = 5

Enter 2 numbers

4

5

Add = 9

Enter 2 numbers

6

7

Max=7

***2. create package series conatain class prime no,fibonacci,armstrong***

***create n object of all classes in another file and access all classes***

**package** Series;

**public** **class** ArmstrongNumber {

**public** **boolean** isArmstrong(**int** num) {

**int** sum = 0;

**int** originalNum = num;

**while** (num > 0) {

**int** digit = num % 10;

sum += digit \* digit \* digit;

num /= 10;

}

**return** sum == originalNum;

}

}

**package** Series;

**public** **class** Fibbonaci {

**public** **int** fibonacci(**int** n) {

**if** (n <= 1) {

**return** n;

}

**return** fibonacci(n - 1) + fibonacci(n - 2);

}

}

**package** Series;

**public** **class** PrimeNumber {

**public** **boolean** isPrime(**int** num) {

**if** (num <= 1) {

**return** **false**;

}

**for** (**int** i = 2; i <= Math.*sqrt*(num); i++) {

**if** (num % i == 0) {

**return** **false**;

}

}

**return** **true**;

}

}

**package** Series;

**import** Series.PrimeNumber;

**import** Series.Fibbonaci ;

**import** Series.ArmstrongNumber;

**public** **class** Main {

**public** **static** **void** main(String[] args) {

// Create objects of all classes

PrimeNumber primeNumber = **new** PrimeNumber();

Fibbonaci fibonacci = **new** Fibbonaci();

ArmstrongNumber armstrongNumber = **new** ArmstrongNumber();

// Access methods of all classes

System.***out***.println("Is 25 a prime number? \n" + primeNumber.isPrime(25));

System.***out***.println("Fibonacci of 10: \n" + fibonacci.fibonacci(10));

System.***out***.println("Is 371 an Armstrong number? \n" + armstrongNumber.isArmstrong(371));

}

}

***Output:***

Is 25 a prime number?

false

Fibonacci of 10:

55

Is 371 an Armstrong number?

true

***3. Write a package for Games in Java, which have two classes Indoor and Outdoor(name,gname). Use a function display () to generate the list of players for the specific games. (Use Parameterized constructor and Array Of Objects)***

**package** Games;

**public** **class** Indoor {

**private** String name;

**private** String[] players;

// Parameterized constructor

**public** Indoor(String name, String[] players) {

**this**.name = name;

**this**.players = players;

}

// Method to display the list of players

**public** **void** display() {

System.***out***.println("Indoor Game: " + name);

System.***out***.println("Players:");

**for** (String player : players) {

System.***out***.println("- " + player);

}

}

}

**package** Games;

**public** **class** Outdoor {

**private** String name;

**private** String[] players;

// Parameterized constructor

**public** Outdoor(String name, String[] players) {

**this**.name = name;

**this**.players = players;

}

// Method to display the list of players

**public** **void** display() {

System.***out***.println("Outdoor Game: " + name);

System.***out***.println("Players:");

**for** (String player : players) {

System.***out***.println("- " + player);

}

}

}

**package** Games;

**import** java.util.\*;

**public** **class** Main {

**public** **static** **void** main(String[] args) {

String[] indoorPlayers = {"Alice", "Bob", "Charlie"};

Indoor indoorGame = **new** Indoor("Table Tennis", indoorPlayers);

// Create an array of players for Outdoor game

String[] outdoorPlayers = {"Dave", "Eve", "Frank"};

Outdoor outdoorGame = **new** Outdoor("Soccer", outdoorPlayers);

// Display the list of players for each game

indoorGame.display();

System.***out***.println();

outdoorGame.display();

}

}

***Output:***

Indoor Game: Table Tennis

Players:

- Alice

- Bob

- Charlie

Outdoor Game: Soccer

Players:

- Dave

- Eve

- Frank

***4. Create a package named Math11. Define class MathsOperations with methods to find the maximum and minimum of three numbers. Create another package Stats. Define class StatsOperations with methods to find the average and median of three numbers. Use these methods in main to perform operations on three integers accepted***

**package** Math11;

**public** **class** MathOperations {

**public** **int** findMax(**int** a, **int** b, **int** c) {

**return** (a > b ? a : b) > c ? (a > b ? a : b) : c;

}

**public** **int** findMin(**int** a, **int** b, **int** c) {

**return** (a < b ? a : b) < c ? (a < b ? a : b) : c;

}

}

**package** Stats;

**public** **class** StatsOperations {

**public** **double** findAverage(**int** a, **int** b, **int** c) {

**return** (a + b + c) / 3.0;

}

**public** **double** findMedian(**int** a, **int** b, **int** c) {

**int**[] numbers = {a, b, c};

java.util.Arrays.*sort*(numbers);

**return** numbers[1];

}

}

**package** Math11;

**import** java.util.Scanner;

**import** java.util.\*;

**import** Stats.StatsOperations;

**public** **class** Main {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

// Accept three integers from the user

System.***out***.println("Enter three integers:");

**int** num1 = scanner.nextInt();

**int** num2 = scanner.nextInt();

**int** num3 = scanner.nextInt();

// Create objects of MathsOperations and StatsOperations

MathOperations mathsOps = **new** MathOperations();

StatsOperations statsOps = **new** StatsOperations();

// Perform operations

**int** max = mathsOps.findMax(num1, num2, num3);

**int** min = mathsOps.findMin(num1, num2, num3);

**double** average = statsOps.findAverage(num1, num2, num3);

**double** median = statsOps.findMedian(num1, num2, num3);

// Display results

System.***out***.println("Maximum: " + max);

System.***out***.println("Minimum: " + min);

System.***out***.println("Average: " + average);

System.***out***.println("Median: " + median);

}

}

***Output:***

Enter three integers:

7

5

9

Maximum: 9

Minimum: 5

Average: 7.0

Median: 7.0

***5. . Write a Java program to create a Package “SY” which has a class SYMarks***

***(members – ComputerTotal, MathsTotal, and ElectronicsTotal). Create another package TY which has a class TYMarks (members – Theory, Practicals). Create n objects of Student class (having rollNumber, name, SYMarks and TYMarks). Add the marks of SY and TY computer subjects and calculate the Grade (‘A’ for >= 70, ‘B’ for >= 60 ‘C’ for >= 50 , Pass Class for > =40 else ‘FAIL’) and display the result of the student in proper format***

**package** SY;

**public** **class** SYMarks {

**int** ComputerTotal;

**int** MathsTotal;

**int** ElectronicsTotal;

**public** SYMarks(**int** ComputerTotal, **int** MathsTotal, **int** ElectronicsTotal) {

**this**.ComputerTotal = ComputerTotal;

**this**.MathsTotal = MathsTotal;

**this**.ElectronicsTotal = ElectronicsTotal;

}

}

**package** TY;

**public** **class** TYMarks {

**int** Theory;

**int** Practicals;

**public** TYMarks(**int** Theory, **int** Practicals) {

**this**.Theory = Theory;

**this**.Practicals = Practicals;

}

}

**package** TY;

**import** SY.SYMarks;

//import TY.TYMarks;

**public** **class** Student {

**int** rollNumber;

String name;

SYMarks syMarks;

TYMarks tyMarks;

**public** Student(**int** rollNumber, String name, SYMarks syMarks, TYMarks tyMarks) {

**this**.rollNumber = rollNumber;

**this**.name = name;

**this**.syMarks = syMarks;

**this**.tyMarks = tyMarks;

}

**public** **void** calculateGrade() {

**int** totalMarks = tyMarks.Theory + tyMarks.Practicals;

**char** grade = 'F';

**if** (totalMarks >= 70) {

grade = 'A';

} **else** **if** (totalMarks >= 60) {

grade = 'B';

} **else** **if** (totalMarks >= 50) {

grade = 'C';

} **else** **if** (totalMarks >= 40) {

grade = 'P';

}

System.***out***.println("Roll Number: " + rollNumber);

System.***out***.println("Name: " + name);

System.***out***.println("Computer Total: " + totalMarks);

System.***out***.println("Grade: " + grade);

}

**public** **static** **void** main(String[] args) {

SY.SYMarks syMarks1 = **new** SY.SYMarks(80, 70, 90);

TY.TYMarks tyMarks1 = **new** TY.TYMarks(85, 95);

Student student1 = **new** Student(1, "John", syMarks1, tyMarks1);

student1.calculateGrade();

Student student2 = **new** Student(7, "ani", syMarks1, tyMarks1);

student2.calculateGrade();

}

}

***Output:***

Roll Number: 1

Name: John

Computer Total: 180

Grade: A

Roll Number: 7

Name: ani

Computer Total: 180

Grade: A

***6.use different package and find the date ,calendar,current date ,time,day,year.***

**package** Date;

**import** java.util.Date;

**public** **class** DateClass {

**public** **static** **void** printDate() {

Date date = **new** Date();

System.***out***.println(date);

}

}

**package** calender;

**import** java.util.Calendar;

**import** java.util.Date;

**public** **class** CalenderClass {

**public** **static** **void** printCalendar() {

Calendar calendar = Calendar.*getInstance*();

Date date = calendar.getTime();

System.***out***.println(date);

}

}

**package** format;

**import** java.text.SimpleDateFormat;

**import** java.util.Date;

**public** **class** FormatClass {

**public** **static** **void** printFormattedDate(Date date) {

SimpleDateFormat dateFormat = **new** SimpleDateFormat("dd/MM/yyyy");

String formattedDate = dateFormat.format(date);

System.***out***.println(formattedDate);

SimpleDateFormat dateFormat1 = **new** SimpleDateFormat("E, dd MMM yyyy HH:mm:ss, Z");

String formattedDate1 = dateFormat1.format(date);

System.***out***.println(formattedDate1);

SimpleDateFormat dateFormat2 = **new** SimpleDateFormat("dd-MM-yyyy");

String formattedDate2 = dateFormat2.format(date);

System.***out***.println(formattedDate2);

}

}

**package** util;

**import** java.util.Calendar;

**public** **class** UtilClass {

**public** **static** **void** printCalendarDetails(Calendar calendar) {

System.***out***.println("Current Week: " + calendar.get(Calendar.***DAY\_OF\_WEEK***));

System.***out***.println("Current Year: " + calendar.get(Calendar.***YEAR***));

**int** month = calendar.get(Calendar.***MONTH***);

System.***out***.println("Current Month: " + (month + 1));

System.***out***.println("Day Of Month: " + calendar.get(Calendar.***DAY\_OF\_MONTH***));

System.***out***.println("Current Time: " + calendar.get(Calendar.***HOUR\_OF\_DAY***) + ":" + calendar.get(Calendar.***MINUTE***) + ":" + calendar.get(Calendar.***SECOND***));

}

}

**package** util;

**import** Date.DateClass;

**import** calender.CalenderClass;

**import** format.FormatClass;

**import** util.UtilClass;

**import** java.util.Calendar;

**public** **class** Main {

**public** **static** **void** main(String[] args) {

DateClass.*printDate*();

CalenderClass.*printCalendar*();

DateClass date = **new** DateClass();

// FormatClass.printFormattedClass(date);

Calendar calendar = Calendar.*getInstance*();

UtilClass.*printCalendarDetails*(calendar);

}

}

***Output:***

Tue Aug 06 17:06:27 IST 2024

Tue Aug 06 17:06:27 IST 2024

Current Week: 3

Current Year: 2024

Current Month: 8

Day Of Month: 6

Current Time: 17:6:27