

Swap

```
public static void swap(int[] list, int e1, int e2) {
int[] mylist = {1, 2, 3, 4, 5};
int[] mylist2 = new int[9];
int temp;
temp = mylist[e1];
mylist2[e2] = mylist[e1];
mylist2[e2] = temp;
for (int i : mylist){
System.out.println(i);
}
```

Lab04 MyDate

```
public class MyDate {
private int year;
private int month;
private int day;
private int objectNumber;
static int objectCounter;
static String[] strMonths = { "January", "February",
"March", "April", "May", "June", "July", "August",
"September", "October", "November",
"December"};
MyDate() {
this.setDate(1900,1,1);
objectCounter++;
objectNumber = objectCounter;
}
MyDate(int aYear,int aMonth,int aDay){
this.setDate(aYear, aMonth, aDay);
objectCounter++;
objectNumber = objectCounter;
}

public int getObjectNumber() {
return objectNumber;
}

public void setDate(int aYear,int aMonth,int aDay) {
this.setYear(aYear);
this.setMonth(aMonth);
this.setDay(aDay);
}
```

Lab04 MyDate (cont)

```
}

public void setYear(int aYear) {
year = aYear;
}

public void setMonth(int aMonth) {
month = aMonth;
}

public void setDay(int aDay) {
day = aDay;
}

public int getYear() {
return year;
}

public int getMonth() {
return month;
}

public int getDay() {
return day;
}

public static int yearDiff (MyDate start, MyDate end)
{
int amonth = start.month;
int ayear = start.year;
int counter = 0;
int result = 0;
if (end.year >= start.year) {
boolean process = true;
while(process == true) {
if(amonth == 12) {
amonth = 1;
ayear++;
counter++;
}
else if (amonth == end.month && ayear == end.year) {
process = false;
}
else {
amonth++;
}
```

Lab04 MyDate (cont)

```

counter++;
}
}
if (start.day > end.day) {
counter--;
}
result = counter / 12;
}
else {
result = -1;
}
return result;
}
@Override
public String toString() {
return day + " " + strMonths[month - 1] + " " + year;
}

MyDate nextDay() {
if (this.getMonth() == 12) {
this.setDate(this.getYear() + 1,1,1);
}
else {
if(this.getMonth() == 4 || this.getMonth() == 6 ||
this.getMonth() == 9 || this.getMonth() == 11) {
if(this.getDay() == 30) {
this.setMonth(this.getMonth() + 1);
this.setDay(1);
}
else {
this.setDay(this.getDay() + 1);
}
}
else if(this.getMonth() != 2){
if(this.getDay() == 31) {
this.setDay(1);
this.setMonth(this.getMonth() + 1);
}
}
}
}

```

Lab04 MyDate (cont)

```

else {
this.setDay(this.getDay() + 1);
}
}
else {
if (isLeapYear(this.getYear()) == true &&
this.getDay() == 29) {
this.setMonth(this.getMonth() + 1);
this.setDay(1);
}
else if (isLeapYear(this.getYear()) == false &&
this.getDay() == 28) {
this.setMonth(this.getMonth() + 1);
this.setDay(1);
}
else {
this.setDay(this.getDay() + 1);
}
}
return this;
}

MyDate nextMonth(){
if (this.getMonth() == 12) {
this.setMonth(1);
this.setYear(this.getYear() + 1);
}
else if (this.getMonth() == 3 || this.getMonth() == 5
|| this.getMonth() == 8 || this.getMonth() == 10) {
if(this.getDay() == 31) {
this.setDate(this.getYear(), this.getMonth() + 1, 30);
}
else {
this.setMonth(this.getMonth() + 1);
}
}
else if (this.getMonth() == 1){
if (isLeapYear(this.getYear()) == true &&
this.getDay() >= 29) {
this.setDate(this.getYear(),this.getMonth() + 1, 29);
}
}
}
}

```

Lab04 MyDate (cont)

```

}
else {
this.setDate(this.getYear(),this.getMonth() + 1, 28);
}
}
else{
this.setMonth(this.getMonth() + 1);
}
return this;
}

MyDate nextYear() {
if (isLeapYear(this.getYear()) == true &&
this.getDay() == 29 && this.getMonth() == 2) {
this.setDate(this.getYear() + 1, 2 , 28);
}
else {
this.setYear(this.getYear() + 1);
}
return this;
}

MyDate previousDay() {
if (this.getMonth() == 1 && this.getDay() == 1) {
this.setYear(this.getYear() - 1);
this.setMonth(12);
this.setDay(31);
}
else {
if(this.getMonth() == 5 || this.getMonth() == 7 ||
this.getMonth() == 10 || this.getMonth() == 12) {
if (this.getDay() == 1) {
this.setMonth(this.getMonth() - 1);
this.setDay(30);
}
else {
this.setDay(this.getDay() - 1);
}
}
else if (this.getMonth() != 3) {

```

Lab04 MyDate (cont)

```

if (this.getDay() == 1) {
this.setDate(this.getYear(), this.getMonth() - 1, 31);
}
else {
this.setDay(this.getDay() - 1);
}
}
else {
if(isLeapYear(this.getYear()) == true &&
this.getDay() == 1){
this.setDate(this.getYear(),this.getMonth() - 1, 29);
}
else if (this.getDay() == 1) {
this.setDate(this.getYear(), this.getMonth() - 1, 28);
}
else {
this.setDay(this.getDay() - 1);
}
}
return this;
}

MyDate previousMonth() {
if (this.getMonth() == 1) {
this.setMonth(12);
this.setYear(this.getYear() - 1);
}
else if (this.getMonth() == 5 || this.getMonth() == 7
|| this.getMonth() == 10 || this.getMonth() == 12) {
if(this.getDay() == 31) {
this.setDate(this.getYear(), this.getMonth() - 1, 30);
}
else {
this.setMonth(this.getMonth() - 1);
}
}
else if (this.getMonth() == 3){
if (isLeapYear(this.getYear()) == true &&
this.getDay() >= 29) {

```

Lab04 MyDate (cont)

```

this.setDate(this.getYear(),this.getMonth() - 1, 29);
}
else {
this.setDate(this.getYear(),this.getMonth() - 1, 28);
}
}
else{
this.setMonth(this.getMonth() - 1);
}
return this;
}

MyDate previousYear() {
if (isLeapYear(this.getYear()) == true &&
this.getDay() == 29 && this.getMonth() == 2) {
this.setDate(this.getYear() - 1, 2 , 28);
}
else {
this.setYear(this.getYear() -1);
}
return this;
}
static boolean isLeapYear(int Year) {
if (Year % 4 != 0) {
return false;
}
else if (Year % 100 != 0) {
return true;
}
else if (Year % 400 != 0) {
return false;
}
else {
return true;
}
}
}
}

```

Range of Data Types

```

Byte = - 128 to 127 [-2^7 to 2^7 - 1]
Short = - 32,768 to 32,767 [-2^15 to 2^15 - 1]
Int = -2,147,483,648 to 2,147,483,647 [-2^31 to 2^31 - 1]
Long = -9,223,372,036,854,775,808 to 9 ,223,372,036,854,775,807
= [-2^63 to 2^63 -1]

```

Lab04 Person

```

import java.time.LocalDate;

public class Person {
private String firstname;
private String lastname;
private MyDate birthday = new MyDate();

Person(String aFirstname, String aLastname){
firstname = aFirstname;
lastname = aLastname;
}

Person(String aFirstname, String aLastname, int aYear,
int aMonth, int aDay){
firstname = aFirstname;
lastname = aLastname;
birthday.setDate(aYear, aMonth, aDay);
}

public int getAge(MyDate aDate) {
int age = MyDate.yearDiff(birthday, aDate);
return age;
}

public boolean isEligible(MyDate elecDate) {
if (MyDate.yearDiff(this.birthday, elecDate) >= 18) {
return true;
}
else {
return false;
}
}

public void printPersonInfo() {
System.out.println("Person: "+firstname+"
"+lastname);
System.out.println("Birthday: "+birthday.getDay()+"
"+MyDate.strMonths[birthday.getMonth() - 1]+"
"+birthday.getYear());
}
}

```

Lab04 Person (cont)

```
}
```

Lab04

```
import java.util.Scanner;

public class ElectionTester {

    public static void main(String[] args) {
        MyDate election = new MyDate(2019, 3, 24);
        Person a = new Person("Lalisa", "Manoban", 1997, 3,
            27);
        printPersonElectionInfo(a, election);
        Person b = new Person("Nuda", "Inter", 2012, 1, 16);
        printPersonElectionInfo(b, election);
        Person c = new Person("Hallo", "World", 1998, 2, 1);
        printPersonElectionInfo(c, election); //
        boolean processing = true;
        while(processing == true) {
            String firstname;
            String lastname;
            int year;
            int month;
            int day;
            Scanner in = new Scanner(System.in);
            System.out.print("Enter firstname or type 'q' to
                exit:");
            String dataA = in.nextLine();
            if(dataA.equals("q") == true) {
                processing = false;
                break;
            }
            else {
                firstname = dataA;
                Scanner in1 = new Scanner(System.in);
                System.out.print("Enter lastname:");
                lastname = in1.nextLine();
                Scanner in3 = new Scanner(System.in);
                System.out.print("Enter year of birthday: ");
                year = in3.nextInt();
                Scanner in4 = new Scanner(System.in);
                System.out.print("Enter month of birthday: ");
                month = in4.nextInt();
```

Lab04 (cont)

```
Scanner in5 = new Scanner(System.in);
System.out.print("Enter day of birthday: ");
day = in5.nextInt();
Person data = new
Person(firstname, lastname, year, month, day);
printPersonElectionInfo(data, election);
}
}
System.out.println("Exit the program. Thank you.");
}

public static void printPersonElectionInfo(Person p,
MyDate election) {
    p.printPersonInfo();
    System.out.println("Age: " + p.getAge(election));
    if(p.isEligible(election))
        System.out.println("This person is eligible to
            vote.");
    else
        System.out.println("This person is NOT eligible to
            vote");

    System.out.println("-----
        ----");
}
}
```

Code

```
//          =          /
/t          =          tap
/*          =          comment
```

Loop

```
while loop
int x = 1;
while (x < 10) {
    System.out.println(x);
    x++;
}

for loop
for (int a = 0; a < 10; a++){
    System.out.println(a);
}

Enchanted for loop
int number[] = { 2, 3, 4, 5, 6, 7, 8, 9, 10, 11};
for (int a: number) {
    System.out.println(a);
}
```

Loop (cont)

while..do loop

```
int x = 1;
do{
System.out.println( x );
x++;
}
while( x < 10 );
```

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