

# 3. Essential Java Classes

## 3. Date and Time Home Tasks

# Home Tasks

1. How old are you in days and months? What day of week is your birthday?
2. Calculate Orthodox Easter and Trinity dates for the current decade

[http://ru.wikipedia.org/wiki/%D0%90%D0%BB%D0%B3%D0%BE%D1%80%D0%B8%D1%82%D0%BC\\_%D0%93%D0%B0%D1%83%D1%81%D1%81%D0%B0\\_%D0%B2%D1%8B%D1%87%D0%B8%D1%81%D0%BB%D0%B5%D0%BD%D0%B8%D1%8F\\_%D0%B4%D0%B0%D1%82%D1%8B\\_%D0%9F%D0%B0%D1%81%D1%85%D0%B8](http://ru.wikipedia.org/wiki/%D0%90%D0%BB%D0%B3%D0%BE%D1%80%D0%B8%D1%82%D0%BC_%D0%93%D0%B0%D1%83%D1%81%D1%81%D0%B0_%D0%B2%D1%8B%D1%87%D0%B8%D1%81%D0%BB%D0%B5%D0%BD%D0%B8%D1%8F_%D0%B4%D0%B0%D1%82%D1%8B_%D0%9F%D0%B0%D1%81%D1%85%D0%B8)

# Home Task I

- How old are you in days and months?
- What day of week is your birthday?

# Home Task I

```
public static void main(String[] args){
    LocalDate currDate = LocalDate.now();
    LocalDate myBirthDate = LocalDate.of(2012, 11, 25);
    DateTimeFormatter formatter =
DateTimeFormatter.ofPattern("dd.MM.yyyy");
    String txt = myBirthDate.format(formatter);
    System.out.println("My birth date = " + txt);
}
```

# Home Task I

```
long amount = myBirthDate.until(currDate, ChronoUnit.DAYS);
System.out.println("I have " + amount + " days old");
amount = myBirthDate.until(currDate, ChronoUnit.MONTHS);
System.out.println("I have " + amount + " months old");
amount = myBirthDate.until(currDate, ChronoUnit.YEARS);
System.out.println("I have " + amount + " years old");
DayOfWeek dof = myBirthDate.getDayOfWeek();
Locale locale = new Locale("en");
System.out.println("I was born on " +
dof.getDisplayName(TextStyle.FULL, locale));
}
}
```

# Home Task I

- See 33a4MyBirthDate project for the full text

# Home Task II

- Calculate Orthodox Easter and Trinity dates for the current decade

# Home Task II

Для определения даты Православной пасхи по старому стилю необходимо:

1. Разделить номер года на 19 и определить остаток от деления  $a$ .
2. Разделить номер года на 4 и определить остаток от деления  $b$ .
3. Разделить номер года на 7 и определить остаток от деления  $c$ .
4. Разделить сумму  $19a + 15$  на 30 и определить остаток  $d$ .
5. Разделить сумму  $2b + 4c + 6d + 6$  на 7 и определить остаток  $e$ .
6. Определить сумму  $f = d + e$ .
7. Если  $f \leq 9$ , то Пасха будет праздноваться  $22 + f$  марта; если  $f > 9$ , то Пасха будет праздноваться  $f - 9$  апреля.



# Home Task II. getEasterAndTrinity

```
public static LocalDate[] getEasterAndTrinity(int year){  
    LocalDate[] ret = new LocalDate[2];  
    int a = year % 19;  
    int b = year % 4;  
    int c = year % 7;  
    int d = (19 * a + 15) % 30;  
    int e = (2 * b + 4 * c + 6 * d + 6) % 7;  
    int f = d + e;
```

# Home Task II. getEasterAndTrinity

```
LocalDate easter = null;  
if (f <= 9) { easter = LocalDate.of(year, 3, 22 + f);  
} else { easter = LocalDate.of(year, 4, f - 9);  
}
```

```
easter = easter.plusDays(13);  
ret[0] = easter;  
LocalDate trinity = easter.plusWeeks(7);  
ret[1] = trinity;  
return ret;
```

```
}
```

# Home Task II. Main Method

```
public static void main(String[] args) {
    System.out.println(" Year      Easter Date   Trinity Date");
    DateTimeFormatter formatter =
    DateTimeFormatter.ofPattern("dd.MM.yyyy");
    for (int i = 2010; i < 2021; i++){
        LocalDate[] dt = getEasterAndTrinity(i);
        String easter = dt[0].format(formatter);
        String trinity = dt[1].format(formatter);
        System.out.format(" %1$4d      %2$10s      %3$10s
%n", i, easter, trinity);
    }
}
```

# Home Task II. Output

Year	Easter Date	Trinity Date
2010	04.04.2010	23.05.2010
2011	24.04.2011	12.06.2011
2012	15.04.2012	03.06.2012
2013	05.05.2013	23.06.2013
2014	20.04.2014	08.06.2014
2015	12.04.2015	31.05.2015
2016	01.05.2016	19.06.2016
2017	16.04.2017	04.06.2017
2018	08.04.2018	27.05.2018
2019	28.04.2019	16.06.2019
2020	19.04.2020	07.06.2020