

**Name:** Ekrem Alper Kesen  
**ID:** 150150018

## **BLG 458E - Bonus Assignment 1**

### **Question 5**

*5. (math question) Is the number of weeks in 400 years an integer value? In other words, is the number of days in 400 years a multiple of 7? If so, what is the possibility that a certain day of a month (such as 1 Jan, or your birthday) is a Sunday (or some other day)? Are all days equally possible?*

The number of the days in 400 years 146097. It is a multiple of 7 and it has 20871 weeks. But the possibility that a certain day of a month is a Sunday or some other day is not equal.

For Jan 29 from 1800 to 2200,

**Saturday:** 56 days

**Sunday:** 58 days

**Monday:** 56 days

**Tuesday:** 58 days

**Wednesday:** 58 days

**Thursday:** 57 days

**Friday:** 58 days

**Total:** 401 days

**Possibility of that Jan 29 is a Sunday:**  $58 / 401 = 0.144638$

As can be seen, although possibilities of the days are close, all days are not equally possible. Jan 29 is more likely to be Sunday rather than Monday.

Also these possibilities are different from other days (Jan 1, Apr 15 etc.).