

## Test Case for Use Case 1

```
public void checkNotification(JLabel bell, User user) {
    Regulations regulations = new Regulations();
    Regulations retrievedRegulations =
regulations.retrieveRegulationDates();
    LocalDate tillDateSubjects =

retrievedRegulations.getTillDateSubjects();
    LocalDate tillDateBooks =
retrievedRegulations.getTillDateBooks();
    LocalDate today = LocalDate.now();

    long daysUntilDeadlineSubjects = ChronoUnit.DAYS.between(today,
tillDateSubjects);
    long daysUntilDeadlineBooks = ChronoUnit.DAYS.between(today,
tillDateBooks);

    ImageIcon bellIcon = new ImageIcon("src/notification.png");
    ImageIcon noNotificationIcon = new ImageIcon("src/bell.png");

    Requests requests = new Requests();
    String message = requests.checkRequests(user);
    System.out.println(message);

    if ((daysUntilDeadlineSubjects <= -2 || daysUntilDeadlineBooks <=
-2) && message.equals("No processed requests for now")) {
        bell.setIcon(noNotificationIcon);
        bell.addMouseListener(new MouseAdapter() {

            @Override
            public void mouseClicked(MouseEvent e) {
                JOptionPane.showMessageDialog(null, "No emergency
notifications for now.");
            }
        });
    } else if (today.isAfter(tillDateSubjects) &&
today.isAfter(tillDateBooks)) {
        bell.setIcon(bellIcon);
        bell.addMouseListener(new MouseAdapter() {

            @Override
            public void mouseClicked(MouseEvent e) {
                JOptionPane.showMessageDialog(null, "There is no open
enrollment period for Books and Subjects");
                bell.setIcon(noNotificationIcon);
            }
        });
    }
}
```

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```
} else if (today.isAfter(tillDateSubjects)) {
```

10

```
    if ((daysUntilDeadlineBooks < 7) &&
```

11

```
!(today.isAfter(tillDateBooks))) {
```

```
        bell.setIcon(bellIcon);
```

```
        bell.addMouseListener(new MouseAdapter() {
```

```
            @Override
```

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```
            public void mouseClicked(MouseEvent e) {
```

```
                JOptionPane.showMessageDialog(null, "There is no  
open enrollment period for Subjects. Also 1 week till closing system  
for Books!!");
```

```
                bell.setIcon(noNotificationIcon);
```

```
            }
```

```
        });
```

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```
    }
```

```
} else if (today.isAfter(tillDateBooks)) {
```

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```
    if ((daysUntilDeadlineSubjects < 7) &&
```

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```
!(today.isAfter(tillDateSubjects))) {
```

```
        bell.setIcon(bellIcon);
```

```
        bell.addMouseListener(new MouseAdapter() {
```

```
            @Override
```

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```
            public void mouseClicked(MouseEvent e) {
```

```
                JOptionPane.showMessageDialog(null, "There is no  
open enrollment period for Books. Also 1 week till closing system for  
Subjects!!");
```

```
                bell.setIcon(noNotificationIcon);
```

```
            }
```

```
        });
```

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```
    }
```

```
} else if ((daysUntilDeadlineSubjects < 7) &&
```

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```
(daysUntilDeadlineBooks < 7)) {
```

```
    bell.setIcon(bellIcon);
```

```
    bell.addMouseListener(new MouseAdapter() {
```

```
        @Override
```

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```
        public void mouseClicked(MouseEvent e) {
```

```
            JOptionPane.showMessageDialog(null, "Less than 1 week  
till system close for Books and Subjects!");
```

```

        bell.setIcon(noNotificationIcon);
    }
});

}else {
    bell.setIcon(noNotificationIcon);
    bell.addMouseListener(new MouseAdapter() {

        @Override
        public void mouseClicked(MouseEvent e) {
            JOptionPane.showMessageDialog(null, message);
        }
    });
}

bell.setIcon(noNotificationIcon);

}

\1\

public static String checkRequests(User user) {
    // Database connection details
    String url = "jdbc:mysql://localhost:3306/softengin23_24";
    String dbUsername = "root";
    String dbPassword = "W45@jqr#8CX";

    LocalDate today = LocalDate.now();
    System.out.println(today);

    // SQL query to retrieve status, date_completed, and about
    String query = "SELECT status, date_completed, about FROM
requests WHERE username = ?";

    StringBuilder message = new StringBuilder();

    try (Connection connection = DriverManager.getConnection(url,
dbUsername, dbPassword);

        PreparedStatement statement =
connection.prepareStatement(query)) {

        statement.setString(1, user.getUsername());

        try (ResultSet resultSet = statement.executeQuery()) {

            while (resultSet.next()) {
                String status = resultSet.getString("status");
                String dateCompleted =
resultSet.getString("date_completed");
                String about = resultSet.getString("about");

```

```

        6
        if (dateCompleted.equals(today)) {
            7
            if (status.equals("completed")) {
                message.append("Your request for
                '").append(about).append("' has been '").append(status)
                .append("' on
            8
            ").append(dateCompleted);
            } else {
                message.append("Your request for
            9
            '").append(about).append("' has been '").append(status).append("'");
            }

            10
            }else{
                message.append("No processed requests for now");
            }
        }

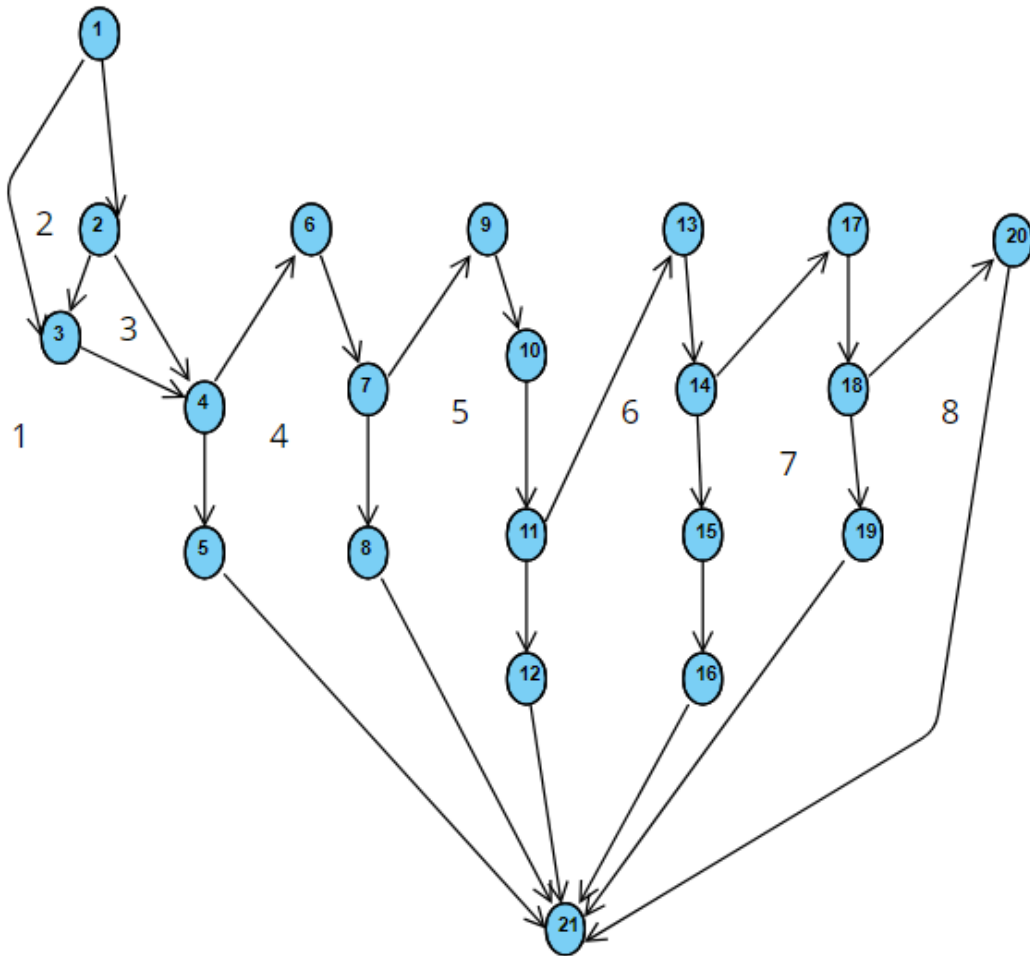
        } catch (SQLException e) {
            11
            e.printStackTrace();
            message.append("Error retrieving request status");
        }

        12
        return message.toString();
    }

```

**Για τη συνάρτηση retrieveRegulationDates() δεν χρειάστηκε κάποια απαρίθμηση στη ροή του κώδικα καθώς δεν υπάρχει κάποιο statement που να αλλάζει τη ροή του κώδικα.**

**Παρακάτω παρατίθεται ο Γράφος για την συνάρτηση checkNotifications.**



Σύμφωνα με τον τύπο:  $V(g) = e - n + 2 =$   
 $= 27 - 21 + 2 = 8$  περιοχές,  
 όπως φαίνεται και στον γράφο.

Εφαρμόζουμε τον αλγόριθμο για εύρεση μονοπατιών. Ξεκινάμε με το συντομότερο έγκυρο μονοπάτι:

**1-2-4-5-21 ή 1-3-4-5-21**

Άρα M1: **1-2-4-5-21 ή (Main flow στο Use Case)**

M1: **1-3-4-5-21**

Ακολουθούν τα υπόλοιπα μονοπάτια που προκύπτουν με προσθήκη ακμών στο M1.

M2: **1-2-4-6-7-8-21 ή**

M2: **1-3-4-6-7-8-21**

M3: **1-2-4-6-7-9-10-11-13-14-17-18-19-21 ή**

M3: **1-3-4-6-7-9-10-11-13-14-17-18-19-21 (Alternative flow 1)**

M4: **1-2-4-6-7-9-10-11-13-14-17-18-20-21 ή**

M4: **1-3-4-6-7-9-10-11-13-14-17-18-20-21 (Alternative flow 3)**

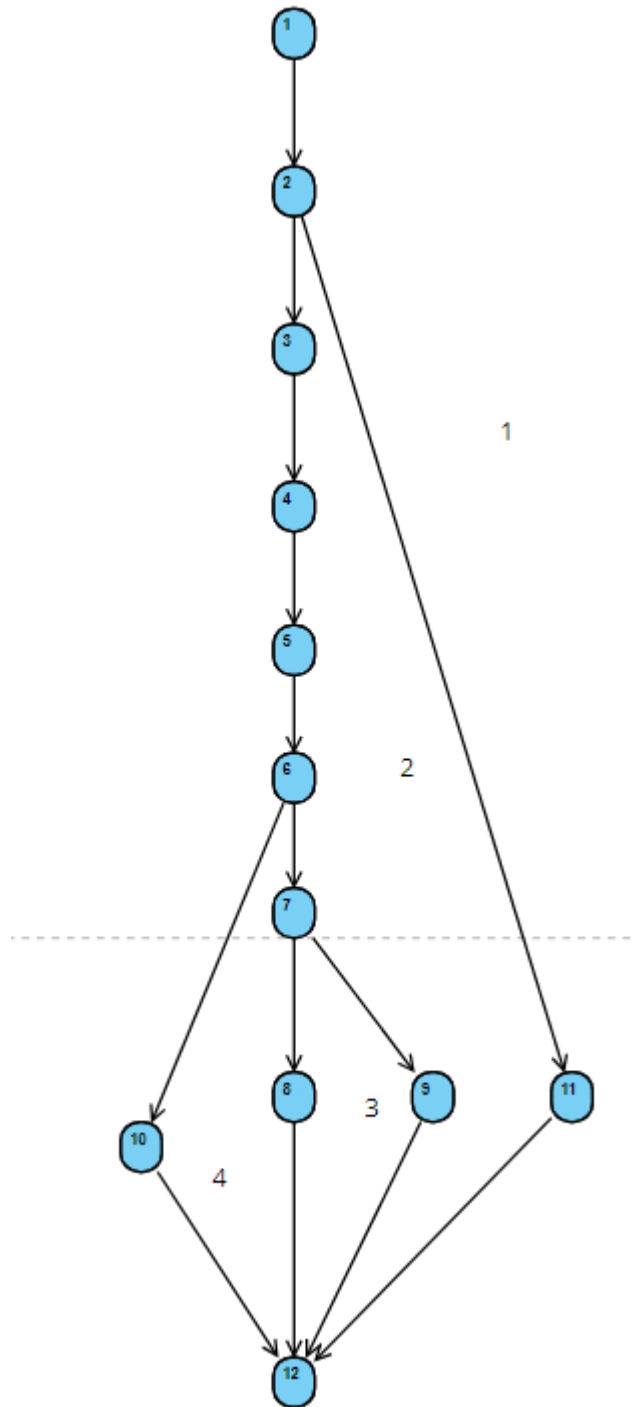
M5: 1-2-3-6-7-8-21 ή

M5: 1-3-4-6-7-8-21 (**Alternative flow 2**)

Path	Περιγραφή	Περίπτωση Ελέγχου	Αναμενόμενο Αποτέλεσμα (Έξοδος Προγράμματος)
M1	Έλεγχος λήξης περιόδου μαθημάτων και Βιβλίων, έλεγχος περάτωσης κάποιου Αιτήματος	daysUntilDeadlineSubjects, daysUntilDeadlineBooks , message	Μήνυμα: No emergency Notifications for now.
M2	Έλεγχος λήξης Μαθημάτων και Βιβλίων	tillDateBooks, tillDateSubjects	Μήνυμα: There is no open enrollment period for Books and Subjects.
M3	Έλεγχος λήξης Μαθημάτων και Βιβλίων	daysUntilDeadlineSubjects < 7, daysUntilDeadlineBooks < 7	Μήνυμα: Less than 1 week till System close for Books and Subjects.

M4	Έλεγχος περάτωσης καποίου Αιτήματος Φοιτητή	Message != No processed requests for now.	Μήνυμα: Your Request for 'Subject Enrollment' has been completed.
M5	Έλεγχος λήξης Μαθημάτων και Βιβλίων	Today.isAfter(tillDateSubjects), Today.isAfter(tillDateBooks) = <u>true both</u>	Μήνυμα: There is no open Enrollment Period for Books and Subjects.

**Στην επόμενη σελίδα παρατίθεται ο γράφος για την συνάρτηση checkRequests.**



Σύμφωνα με τον τύπο:  $V(g) = e - n + 2 =$   
 $= 14 - 12 + 2 = 4$  περιοχές,  
 όπως φαίνεται και στον γράφο.



Εφαρμόζουμε τον αλγόριθμο για εύρεση μονοπατιών. Ξεκινάμε με το συντομότερο έγκυρο μονοπάτι:

M1: 1-2-11-12

Ακολουθούν τα υπόλοιπα μονοπάτια που προκύπτουν με προσθήκη ακμών στο M1.

M2: 1-2-3-4-5-6-7-8-12

M3: 1-2-3-4-5-6-10-12

M4: 1-2-3-4-5-6-7-9-12

Pat h	Περιγραφή	Περίπτωση Ελέγχου	Αναμενόμενο Αποτέλεσμα (Έξοδος Προγράμματος)
M1	Έλεγχος σύνδεσης στη Βάση Δεδομένων	Connenction connection = DriverManager. <u>. = null</u>	Message: Error retrieveing Request status.
M2	Έλεγχος Ημερομηνίας και Request status	dateCompleted, status	Μήνυμα: Your request for ").append(about).append(" has been ").append(status).append(" on ").append(dateCompleted)
M3	Έλεγχος Ημερομηνίας	dateCompleted not equals(today)	message.append("No processed requests for now");
M4	Έλεγχος Ημερομηνίας και Request status	dateCompleted equals(today) , status not equal(completed)	Μήνυμα: message.append("Your request for ").append(about).append(" has been ").append(status).append(")");

