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/**
 * Answer to TMA01 Question 1.
 *
 * @author (Thomas Mason)
 * @version (23/11/2018)
 */
public class RoomSafe
{
    private String password;

    /**
     * Constructor for objects of class RoomSafe
     */
    public RoomSafe()
    {
        password = "Adminadmin1";
    }

    /**
     * Returns the password instance variable.
     */
    public String getPassword()
    {
        return password;
    }

    /**
     * Checks if the given password has minimum of 8
     */
    public boolean isValidLength(String pw)
    {
        return pw.length() >= 8;
    }

    /**
     * Return true if at least one of the characters in the argument
     * pw is a digit
     * otherwise return false
     */
    public boolean hasDigit(String pw)
    {
        boolean result = false;
        for (int i = 0; i < pw.length(); i++)
        {
            if (Character.isDigit(pw.charAt(i)))
            {
                result = true;
            }
        }
        return result;
    }

    /**
     * Return true if at least one of the characters in the argument
     * pw is upper case
     * otherwise return false.
     */
    public boolean hasUpperCase(String pw)
    {
        boolean result = false;
        for (int i = 0; i < pw.length(); i++)
        {

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        if( Character.isUpperCase(pw.charAt(i)))
        {
            result = true;
        }
    }
    return result;
}

/**
 * Return true if all checks on the argument pw is truthy.
 */
public boolean isValidPassword(String pw)
{
    return isValidLength(pw) && hasDigit(pw) && hasUpperCase(pw);
}

/**
 * Sets the password and returns whether its valid or not.
 */
public void setPassword(String pw)
{
    if (isValidPassword(pw)) {
        System.out.println("The password " + pw + " is valid.");
        password = pw;
    } else {
        System.out.println("The password " + pw + " is not valid.");
    }
}

/**
 * Checks to see if password has changed from the default.
 */
public boolean hasChanged()
{
    if (this.getPassword().equals("Adminadmin1") == true){
        return false;
    } else {
        return true;
    }
}
}
```