

Equivalence Classes Partitioning

Suppose a registration page for an application as shown below. A user needs to fill in the information and click “Submit” to request to be registered.



The image shows a 'User Registration' form on a light blue background. The title 'User Registration' is at the top in a large, white, serif font. Below the title, there are several input fields: 'UserName:', 'FirstName:', 'LastName:', 'Email:', 'Age:', 'City:', and 'Postal Code:'. Each label is followed by a white input box with a black border. The 'City:' field is a dropdown menu with 'Ottawa' selected and a small downward arrow. At the bottom left of the form is a 'Submit' button with a light blue background and a black border.

Various constraints must be satisfied for the entered values:

- User Name is mandatory. It must be between 6 and 12 characters long, start with a letter and include only letters and digits.
- FirstName is optional. When provided, it must start with a letter and only include letters and spaces.
- LastName is optional. When provided, it must start with a letter and only include letters and spaces.
- Age is mandatory and must be a number greater or equal to 18 and less than 65.
- Email is mandatory and must satisfy the format *<local-part>@<domain>*. Where *<local-part>* consists of letters, digits and characters '.', '_', '+', '-'. *<domain>* must consist of at least two *fragments* separated by dots '.'. Each *fragment* must consist of letters, digits, '-' except the last fragment that must only consist of letters.
- City must be one of Ottawa, Toronto, Montreal or Halifax
- Postal Code must be 6 characters long in the format *<letter><digit><letter><digit><letter><digit>* where *<letter>* is capital that is not D, F, I, O, Q or U, and the first position also does not make use of the letters W or Z. An optional space is allowed between the *<letter>* at the 3rd position and the next *<digit>*.

Note that only ASCII alphabetic characters (a-z and A-Z) are accepted as letters. Once a registration form is submitted, the system flags any wrong input with an appropriate error message.

| Field | Error Messages | Cause |
|-------------|---|--|
| UserName | Err1: Wrong UserName format | Specified format not satisfied |
| | Err2: UserName is mandatory | UserName not provided |
| | Err3: Size must be between 6 and 12 | UserName is less than 6 characters or more than 12 characters long |
| FirstName | Err4: Wrong FirstName format | Specified format not satisfied |
| LastName | Err5: Wrong LastName format | Specified format not satisfied |
| Email | Err6: Wrong Email format | Specified format not satisfied |
| | Err7: An Email address is mandatory | Email not provided |
| Age | Err8: Age is mandatory | Age not provided |
| | Err9: must be greater than or equal to 18 | Age less than 18 |
| | Err10: must be less than or equal to 64 | Age greater than 64 |
| City | | |
| Postal Code | Err11: Wrong Postal Code format | Specified format not satisfied |

The system accepts the registration request when all the input constraints are satisfied.

1. Identify Equivalence Classes for the registration application
2. Perform a Boundary Value Analysis for the application
3. Derive test cases based on Myer's selection approach using boundary values as needed