



COMP132 : Advanced Programming
Programming Project Report

PhotoCloud Application Design and Development

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1)General Demo Information:

- **List of users (nickname, password, type)**

USERNAME	PASSWORD	TYPE
beyza_tan	beyza1907	Professional
enes_yildirim	enes1234	Free
burak_ozkaya	burak123	Free
musti	musti123	Hobbyist
serhat_keskin	serhat123	Hobbyist
simay_doruk	simay123	Hobbyist
ali_ari	ali3223	Professional
yuksel10yaren	yaren123	Free
ata_ata	ata4321	Professional
ymutlu21	yasin12345	Professional
fatma123	fatma123	Hobbyist
serhat123	serhat123	Hobbyist
yasin_mutlu	yasin4920	Professional

- **Information of each user**

Username	Name	Surname	Email	Password	Age	Tier	Profile Photo
serhat123	Serhat	Keskin	serhat21@gmail.com	serhat123	34	Hobbyist	user8.jpeg
fatma123	Fatma	Mutlu	fatma@gmail.com	fatma123	24	Hobbyist	default.png
ymutlu21	Yasin	Mutlu	yasin@yahoo.com	yasin12345	46	Professional	user8.jpeg
beyza_tan	Beyzanur	Tan	beyza.fb@gmail.com	beyza1907	18	Professional	user1.jpeg
enes_yildirim	Enes	Yildirim	enes@gmail.com	enes1234	25	Free	user2.jpeg
burak_ozkaya	Burak	Ozkaya	burak@hotmail.com	burak123	25	Free	user3.jpeg
musti	Mustafa	Aslan	mustafa@yahoo.com	musti123	54	Hobbyist	user4.jpeg
serhat_keskin	Serhat	Keskin	serhat@gmail.com	serhat123	28	Hobbyist	user5.jpeg
simay_doruk	Simay	Doruk	simay34@gmail.com	simay123	22	Hobbyist	user6.jpeg

ali_ari	Ali	Ari	ali_123@hotmail.com	ali3223	19	Professional	user7.jpeg
yuksel10yaren	Yaren	Yuksel	yaren_yuksel@hotmail.com	yaren123	45	Free	user8.jpeg
ata_ata	Ata	Sertekin	ata@gmail.com	ata4321	49	Professional	user9.jpeg
yasin_mutlu	Yasin	Mutlu	mutluyasin55@gmail.com	yasin4920	20	Professional	admin.jpeg

- **Information about the administrator**

Username: yasin_mutlu

Name: Yasin

Surname: Mutlu

Age: 20

Email: mutluyasin55@gmail.com

Password: yasin4920

Profile Photo: admin.jpeg

Tier: Professional

2)Application usage

- **Welcome**

When the application has started first windows which is welcome page will appear. In this window users can select to exist, to login or to sign up.

- **Sign up/Login Guide**

A new users can create an account with provide necessary information which are a unique username, a password, and a unique email address. These cannot be left blank. Also new

users should provide their actual name, surname, and age. If the age field is left blank the default age will be 0. Also, there is an option to select a profile photo from the computer. If the photo is not selected a default profile photo will be selected automatically. Also, user decide their tier between three option Free, Hobbyist, Professional. They differentiate with number of usable filters. Free tier initially selected automatically. The username, password and email address must be appropriate with some rules. A username must start with a letter. the length of the username must be longer than 3. Username must be unique that must not be taken before by any user. Username cannot contain special characters. This means username can contain just letters, numbers and allowed characters ‘-’, ‘_’, ‘.’ A password length must be between 6 and 12. Password cannot contain special characters except allowed characters ‘-’, ‘_’, ‘.’ An email format must be [****@****.com](#) which means it must contain ‘@’ sign and “.com” at the end. The stars can be replaced with any number of any characters except “@”. Also, an email must be unique i.e. it must not be taken by any user. Any input that violet these rules result in displaying an error message according to error. If the user does not violate any rules, then the user’s account is created. Also, in sign up page user can go to log in page if the user has an account.

In login page users that have an account can log in with their unique username and password. If the username is invalid or password does not match with related username, then an error message will be displayed. In login page user can exit or can go to sign up page.

- **User’s Guide**

When a user logs in to their account, they are redirected to discover page. when a new user creates an account, they are redirected to their profile page.

- **Discover Page**

In discover page all public posts of all users are displayed. User can see the shared photo, optional post description, number of likes, dislikes, and comments. Also, user can see the comments that the other user comments on the post and the user who commented. Also, at the top of the photo the nickname and tier of the post owner are displayed. A user can click on the nickname and visit the user profile page. In discover page user can like or dislike a post and can comment on the post. In discover page there is a button to log out and go to log in page. A user also can create a post in discover page. In discover page a user can

go to another user profile page by searching her/his username. Also, user can go to their profile page.

- **Another User Profile Page**

A user can visit another user profile page. Users can see another user's public information which are profile photo, name, surname, and username. Also, the public posts of the user which is visited displayed same way in discover page. And a user can like, dislike and comment on a post in another user profile page same way with discover page. With discover button user can back to discover page.

- **User Profile Page**

Users can see their own profile page. In profile page they can see their profile photos, name, surname, username, email, and age information. Also, they can see their all posts regardless of whether they are public or not. In profile page user have some control on their posts. They can decide whether other users can see their posts by changing status between private or public. Initially a post created private but in profile page a user can choose public and apply to share it. Also, user can remove post from their page and from discover page by clicking delete button. User can save their filtered photos to "saved_photo\\" directory with name "<username>_<filter>_<photo name>.jpg". In profile page user can create a new post. Also, users can change their information except username by clicking the button. By following the sign-up rules, users can change their information. Users can back to discover page in their profile page.

- **Photo Editing and Filters' Guide**

Posts

Posts consist of some components. The main component is the shared photo. User must select a photo to create a post. In addition to photo, a post has optional description, an owner that create the post, number of likes, dislikes, comments, the users that liked or disliked the posts and comments on the post and their comments.

Photo Editing and Filters

In discover page or profile page user can create a post. In order to create a post user must select a photo. If the user tries to create a post without any photo an error message

will be displayed. After the photo selected the chosen photo will be displayed on the page. User can add an optional description for the post. User can edit the photo by applying some various filters. User can access to filters according to their tiers. Free users can apply just blurring and sharpening filters. Additionally, hobbyist user can change photo's contrast and brightness values. A professional user can access extra grayscale and edge-detection filters. A user can use sliders to apply filters as much as he/she wants by adjusting the degree.

- **Administrator's Guide**

Admin user is a kind of a user whose tier is professional. In addition to normal user admin can remove any public post from the discover page or another user profile page.

3)Project Design Description:

- **Class relations.**

AdminUser.java

This class extends the User class. When this class initiates the admin user information pass the super constructor and the admin user creates.

AnotherUserProfilePage.java

This class open a frame that displays another user profile page. The constructor takes two user parameters in order to determine profile page owner user and the user that display the profile page. It has method "createPost(Post p)" that take a post and create a PostPanel object to create a panel that contains post components.

ChangingPage.java

ChangingPage is a class that when it initiated create a dialog to allows user to change his/her information. It takes three parameters. A string that displays error message when needed, the user whose information will be changed and a

UserProfilePage to detect object where it is directed. It has some methods to check validity of changed information i.e. email and password.

CreatePost.java

CreatePost is a class that allow user to create post and edit post photos. This class takes four parameters. A user that will be owner of the post. A string that displays an error message when needed. And also, there are two parameters that one of them is UserProfilePage and the other is DiscoverPage to determine object where this class is directed. Using these parameters, we can create a new DiscoverPage or UserProfilePage accordingly.

DiscoverPage.java

DiscoverPage is the main window of the application that displays all users public post with help of the some it's methods. This class take one user parameter to detect which user know is logged in. From this frame with help of some buttons user can logged out, create post or go to profile page. Also user can search another user and visit his/her profile page.

Filters.java

Filters class has 6 static methods to make filtering. Each of these methods takes an BufferedImage and percentage to determine how much filter will be applied to image and returns filtered BufferedImage.

ImageMatrix.java

ImageMatrix class is used to make matrix representation of the BufferedImages and allow to play with it's RGB values. Also with help of its methods it can return the BufferedImage instance of changed image matrix values.

ImageSecretary.java

ImageSecretary class is used to read and write images from/to specific path.

LoginPage. .java

LoginPage class is displays a frame to allow user to log in. It takes one string parameter to display an error when needed. It has some methods to check validity of username and password. If the username and password is valid, then the user is redirected to DiscoverPage.

Main.java

This class is the main class of the application. In this class the users read from the users.txt file and the posts read from the posts.txt file. The application getting start from here by initiate the WelcomePage.

Post.java

Post class is used to create post objects. This has two constructors. The first one takes a User to determine owner of post, a ImageIcon that determine the post photo, a String photo name that is name of the used photo, and a String filter that determine which filter applied to photo to be used to determine the name of the file when the user want to save the photo. Other constructor takes same parameters and additionally takes optional String description. It has some method to perform various tasks such as add comment, increase like and dislike numbers. Also, all post has ispublic boolean value that initially with “false” value.

PostPanel.java

This class extends from JPanel. This class takes three parameters. A Post that will be displayed on this panel, a User that displays the post, and an Object which determines where the post panel will be displayed i.e., UserProfilePage, AnotherUserProfilePage or DiscoverPage. The panel simply contains post photo, optional description, like and dislike numbers and comments. And in some cases such as in UserProfilePage it has some buttons to remove it, save it or share it.

SigninPage.java

This class is simply creating a frame to allow new user to create an account. It takes a String to display an error message when needed. It has some methods to check validity of information that the user provides. If they are not valid, displays an error message that warns user about the problem specifically.

Tier.java

Tier is an “enum” type. It has three component that determines each user’s tier.

User.java

This class simply keep users’ information. Each instance of this class is a user that can log in to application. The constructor takes 8 parameters. It takes 5 String that are username, name, surname, password, email, an int value for age, an ImageIcon for profile photo and a Tier that represents tier o user.

UserProfilePage.java

This class create a frame to display user information and posts. It takes one parameter that is the user. Also, it has buttons to create post, change information and go to discover page.

WelcomePage.java

When the application starts, the welcome page gets initiated and display a frame that welcomes the user. It has three buttons: log in, sign up, and exit button.

- **Inheritances, type hierarchies, interfaces, abstract classes.**

In this project there is not abstract classes and interfaces except the GUI classes. The AdminUser class inherits from the User class. The PostPanel extends from JPanel.

- **GUI components.[1]**

JPanel: JPanel is a container that contains another component and place them accordingly. It is used set complex user interfaces.

JFrame: JFrame is the main container that creates the window. All other components are added to main frame.

JLabel: JLabel is a component that display specific texts or image icons.

JButton: JButton is a component to perform a specific action when it is clicked. It has a method an event listener to implement performed tasks.

JScrollPane: JScrollPane is a container that can add a scroll bar horizontally or vertically when the content of it exceeds the visible area.

JDialog: JDialog is a pop-up window that used for displayed messages or taking inputs.

JTextField: JTextField allow user to accept a text message. The text message should be single line.

JFileChooser: JFileChooser is component that allow user to choose a file or directory.

JRadioButton: JRadioButton is a component that allows user to select or deselect.

ButtonGroup: ButtonGroup is a group of buttons that allow users to select just one abstract button such as JRadioButtons.

JSlider: JSlider is a component that allows user to choose a value from a range by sliding.

JTextArea: JTextArea is component that allows user to display or accepting multi line text messages.

- **Additional Design Detail**

There are some directories other than the “src\”. The “database\” folders contain two text files: “users.txt” , “posts.txt”. This files are used as a database to keep track of new accounts and created posts based on write necessary information about users and posts. However, this application cannot keep track of comments and liked/disliked users for a post and the filters. Another folder ”errors_and_infos\” contains two text file: “application_error.txt” , “application_info.txt”. The first file keeps all error while application is terminating. The other file keep processes that performed while application is terminating. The “icons\” directory keeps some png photos to set some label and button icons. The “photos\” folder keeps default user profile photos and default posts photos. The “saved_photo\” folder is keep the photos that user want to save an filtered image.

Note: All GUI designs are made using Window-Builder in Eclipse.

References

- [1] *javax.swing (Java Platform SE 7)*. (n.d.). javax.swing (Java Platform SE 7). Accessed: 25 May,2023,<https://docs.oracle.com/javase/7/docs/api/javax/swing/package-summary.html>