**Final Design Report**

Our team implemented a social networking website called *Social Circle* that was specifically crafted for the target audience of *Rose-Hulman Students*. On the home screen of this website students can either sign-in if they are an existing member or sign up for an account using their Rose username. Once a user is signed in, they can take several actions to explore and grow their social network. There are various features and abilities that have been successfully implemented throughout the site. Searching for friends using filters such as groups a user might belong to (i.e. sports, friends, graduation year, clubs, job, or residence hall) can be done under the “Search” tab of the site. The results are then displayed in descending order by “degree of separation.” In other words, a friend of a friend is one degree of separation and so on. Once a desirable person is found via the filtered search results, a user then has the ability to add them as a friend. After you have established friends, you then have the ability to schedule a meeting with that friend which will appear under the “Meetings” tab of the site. Because this site is essentially based on filtered searches, it was imperative that each individual user can edit any of their information about themselves which can be done under the “Account” tab. Everything from adding or deleting majors to changing your name to deleting your account all together can be done under the Account tab. Other successfully implemented background features include session validation to prevent non-logged in users from visiting any page of the site without first going through the log in screen. Log out functionality to allow a user to terminate their session. Sign up and log in field filed validation and error messages to notify the user about an unsuccessful sign up or login such as an “Invalid Username” or tell you specifically what fields still need to be filled out. Multi forms on the account page to provide change efficiency by allowing focus on exactly what the user wants to change. Multi field / parameter filtering for user searches. The “Search” tab also allows the ability to display results that are “only your friends” for more relative filtering. All of the above features have been successfully implemented and thoroughly tested.

All of the user information is saved in XML files and can be accessed after logging out and then logging back in. For the groups we used a tree set to hold all the members with the ID string as a comparator. In order to implement the A\* algorithm when finding the shortest path from you to other people we used a stack and a priority queue. These data structures enabled seamlessly quick access to information and would allow for timely access even if the network expanded.