



Web site for Deployment of COMPS Computer-aided Collaborative Learning Curriculum in Classrooms

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Goal

COMPS collaborative small-group exercises are being used in NC A&T computer science classes. During computer-lab time students work together by special computer-chat page.

- It is a one-stop web page where instructors can register classes, upload student rosters, and schedule lab sessions
- This project provides the tools for professors to integrate COMPS exercises into a regular classroom curriculum
- The web site delivers the lab experience. The students sign into this web page, where they are guided through pre-tests, the lab sessions, post-tests, and surveys
- These disparate student activities and resulting data are hosted by different web sites, but the control page provides one place for the student to log in and links together the separate records for each student
- The aim is to produce simple and friendly interface to export our COMPS curriculum to students and faculty from around the country

Design

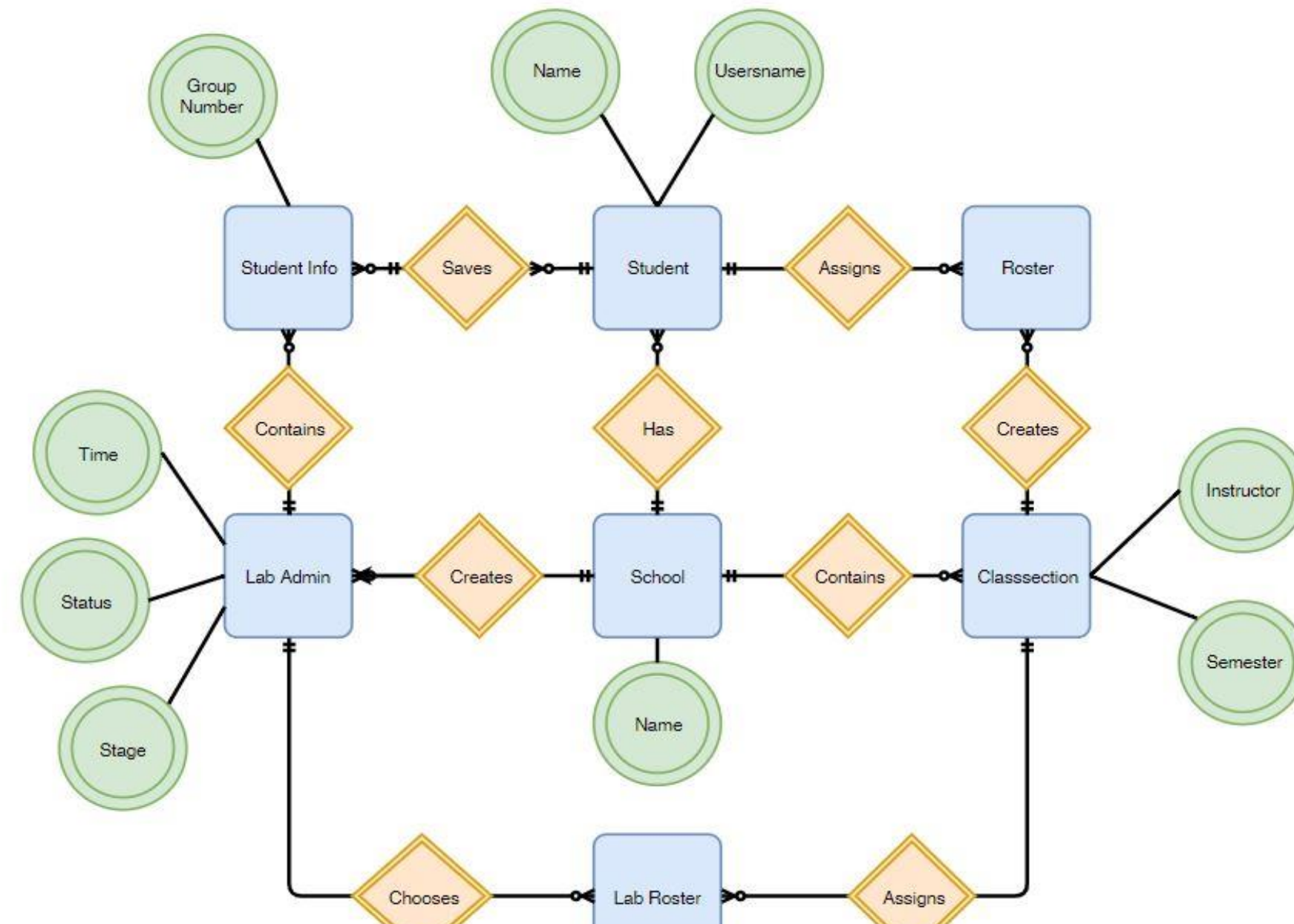


Figure 1: Entity Relationship Diagram for COMPS webpage

Discussion /Chat Engine

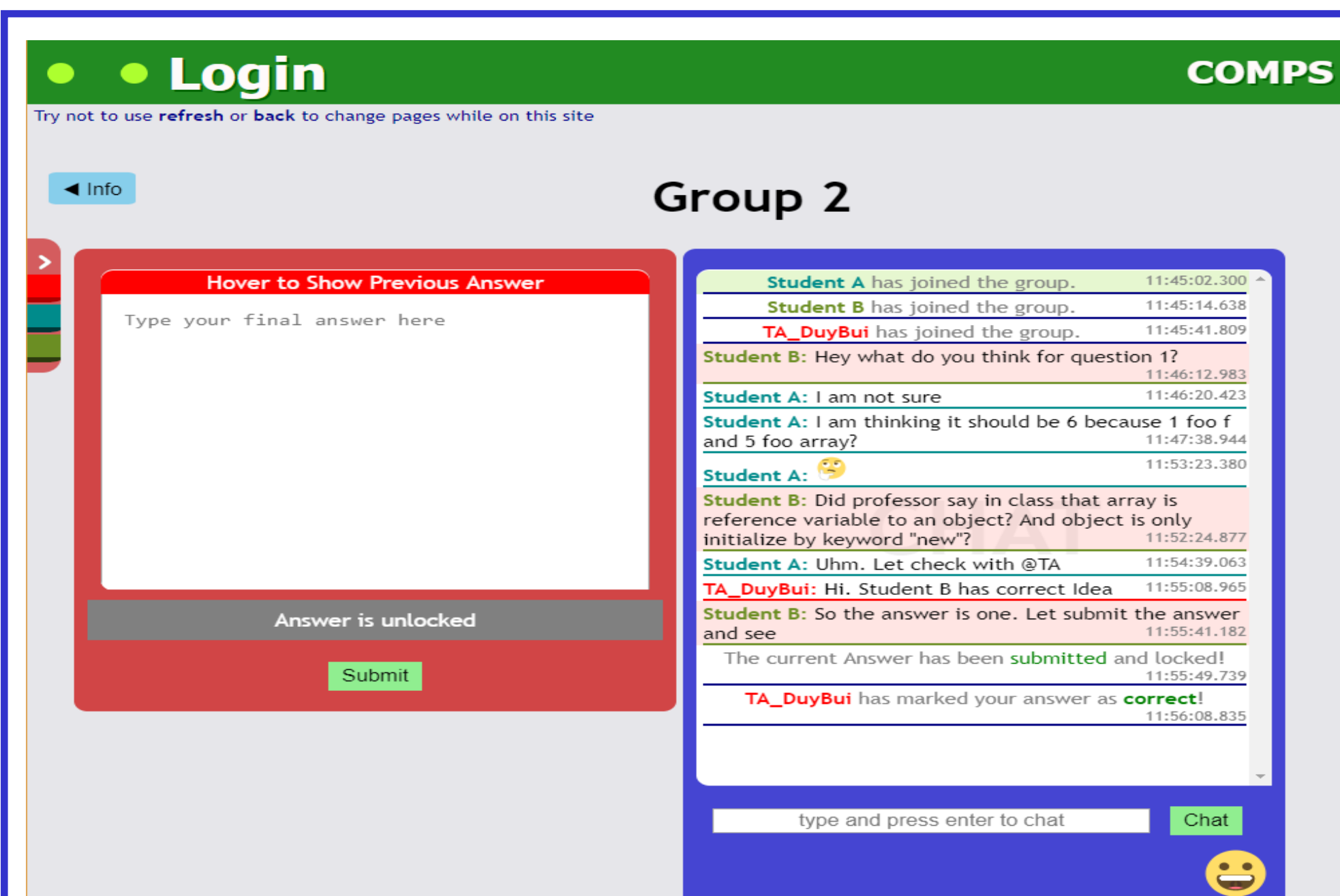


Figure 2: Chat Engine Interface

- Students are assigned to group and work together to find the answer
- Teaching Assistant is there to check students' answers and to give helpful hints

Web page

Table 1: Upload class roster

First Name	Last Name	Primary Email	Username
John	Smith	Jsmith@aggies.ncat.edu	Jsmith
Duy	Bui	dqbui@aggies.ncat.edu	Dqbui
North	Carolina	caro2@aggies.ncat.edu	Caro2

F Name	L Name	Group Num	Stud Status
duy	bui	11	ACTIVE
John	Carden	10	ACTIVE
Matthew	Trotter	12	IN ACTIVE
Michael	Glass	11	ACTIVE
Kailla	Billie	12	IN ACTIVE
Jung Hee	Kim	10	IN ACTIVE

- Class roster can be extracted as CVS file from Blackboard
- Quick and Easy setup for classes

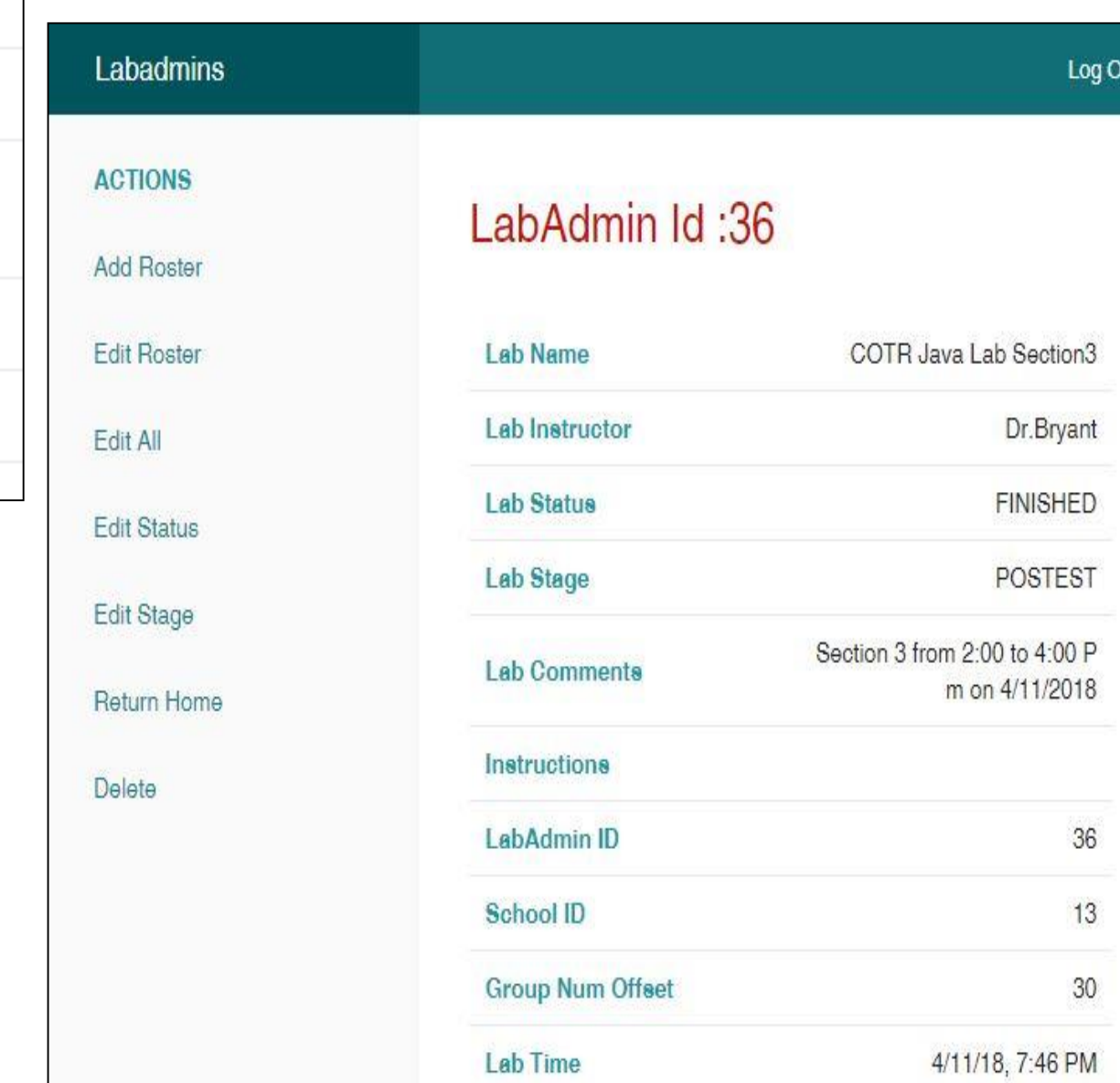


Figure 3: Lab roster control

- Track students' activity and assign discussion group numbers
- Setup lab ahead of time and save
- Professor/Teaching Assistant use web-page to sequence activities during the lab time
- Server is available 24/7 and protected

Figure 4: Lab Admin control

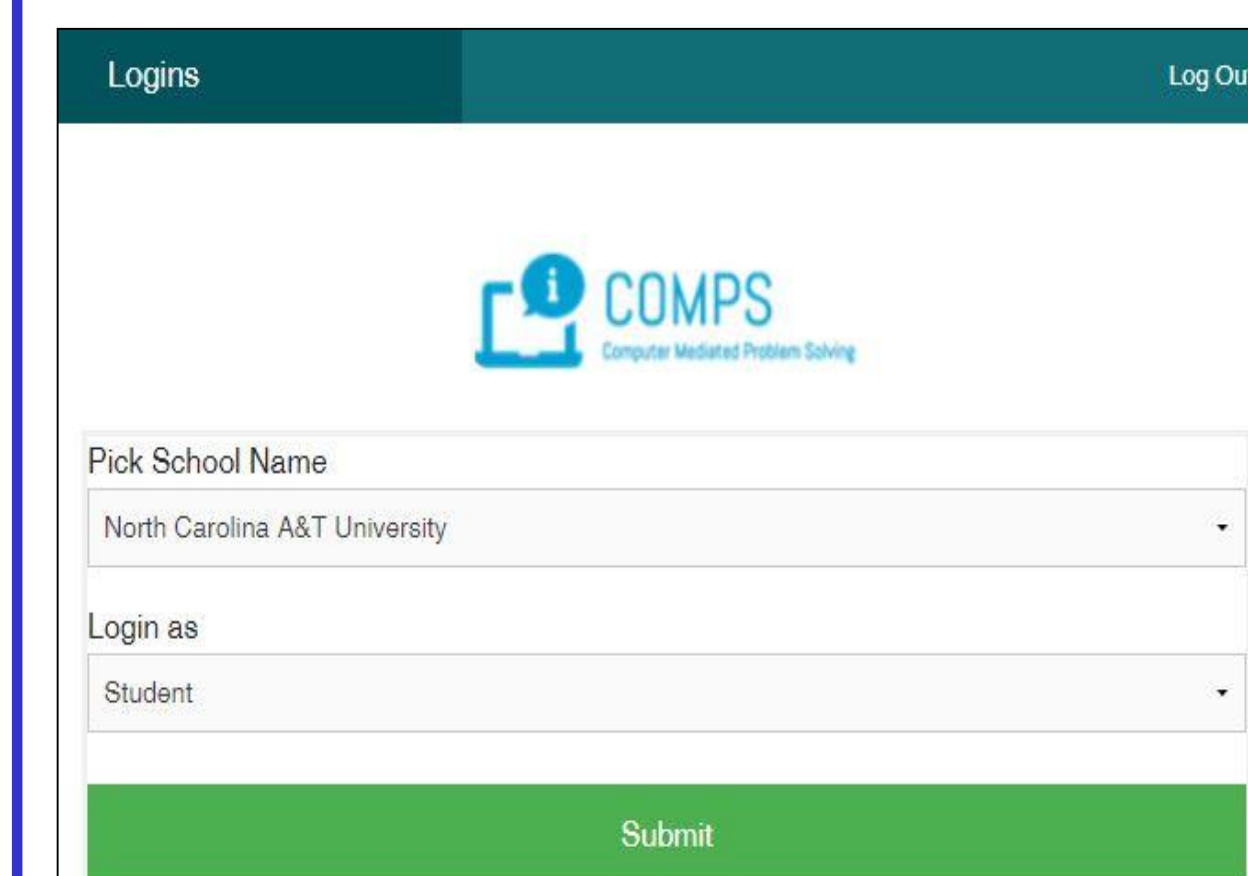


Figure 5: Landing Page

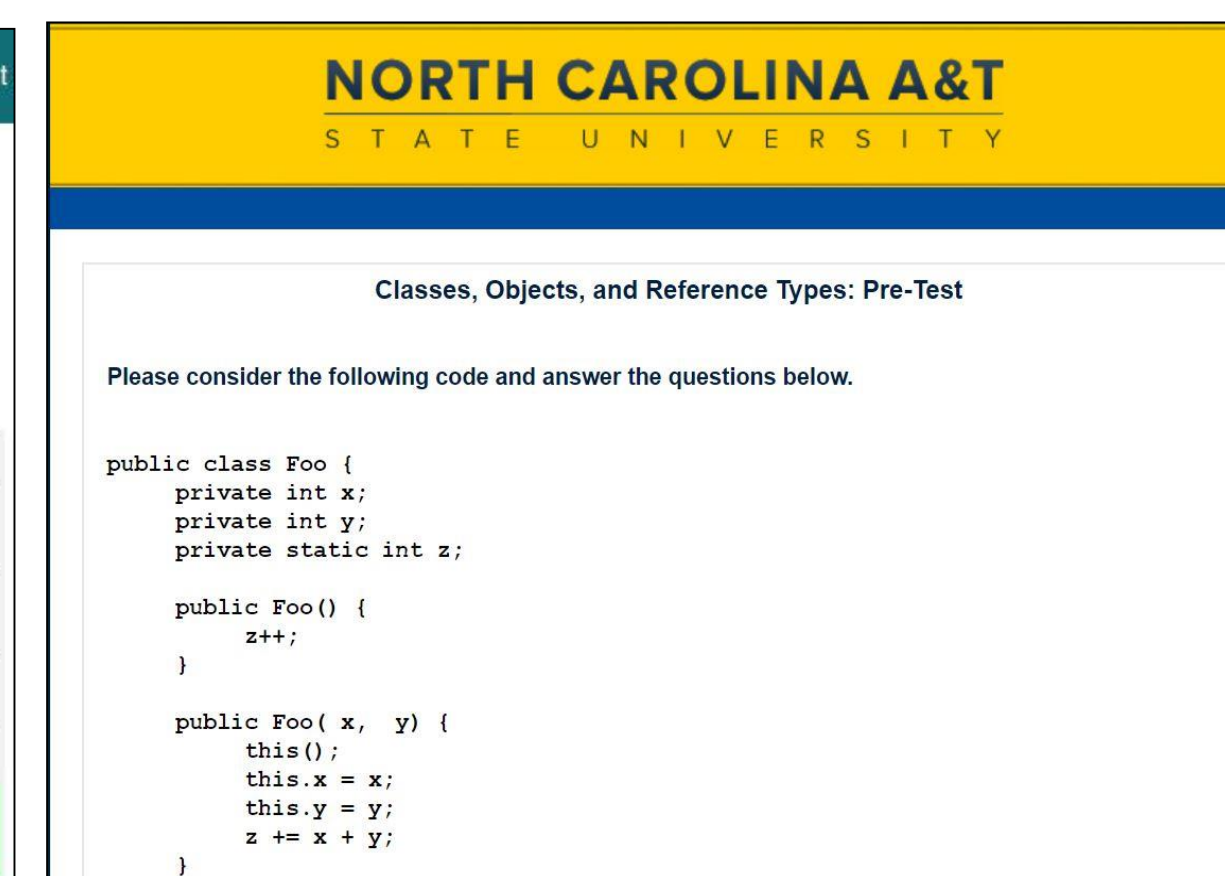


Figure 6: Pretest, using Qualtrics service

- Student login at lab time, guided through activities
- Students activity is recorded and linked together for class and research purposes

Future Work

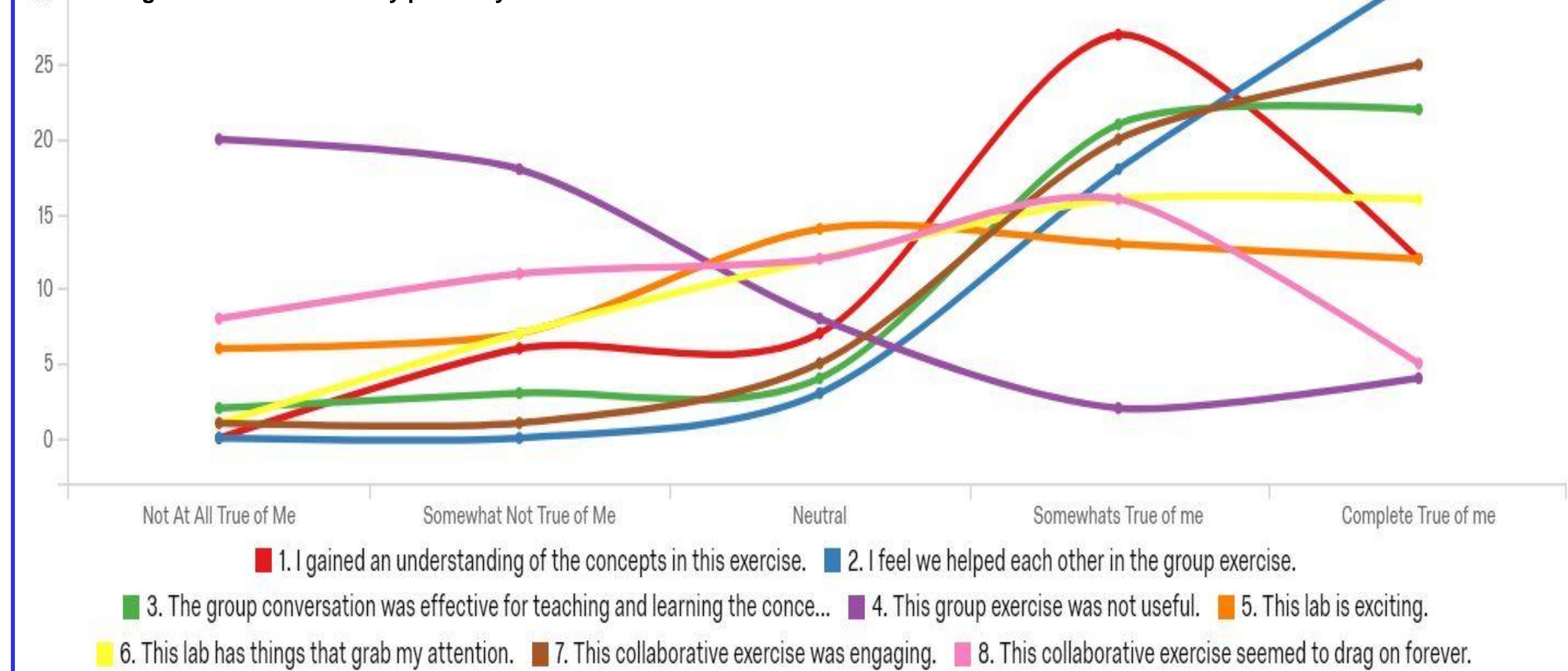
- Streamlining the lab process including improvement of User Interface and adding smart feature reduce manual input from users
- Establish better communication between Qualtrics and COMPS page to enhance user experiment for both students and professors

Acknowledgement

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Data Visualization

Figure 7 : End Lab Survey power by Qualtrics



- Student generally express good feeling toward the lab exercise. In addition, they can learn or establish better understanding of class material by discussing with their classmates

Data Analysis

```
public static void main( String [] args ) {
    int i = 0;
    Foo f = new Foo();
    Foo [] fooarray = new Foo[5];
    System.out.println( f.toString() );
    // A

    for (i=0; i<fooarray.length; i++)
        fooarray[i] = new Foo( i, i );
    // B
    fooarray[fooarray.length-1] = f;

    System.out.println( fooarray[fooarray.length-1].toString() );
    // C
}
```

- Analyze the main method down through the line marked // A in the code.
- P1) At the line marked // A in the main method how many objects of class Foo have been created?
- a) 0
 - b) 1
 - c) 5
 - d) 6

Figure 8: Example question for pre-test

- Pre-test and Post-test is being graded automatically
- Data is used to measure learning gain from lab exercise
- Data is used to calculate and determine effectiveness of the lab itself
- Revision of question is needed if question is too hard
- Strengthen student's knowledge in particular area is needed if too many students' answer is incorrect

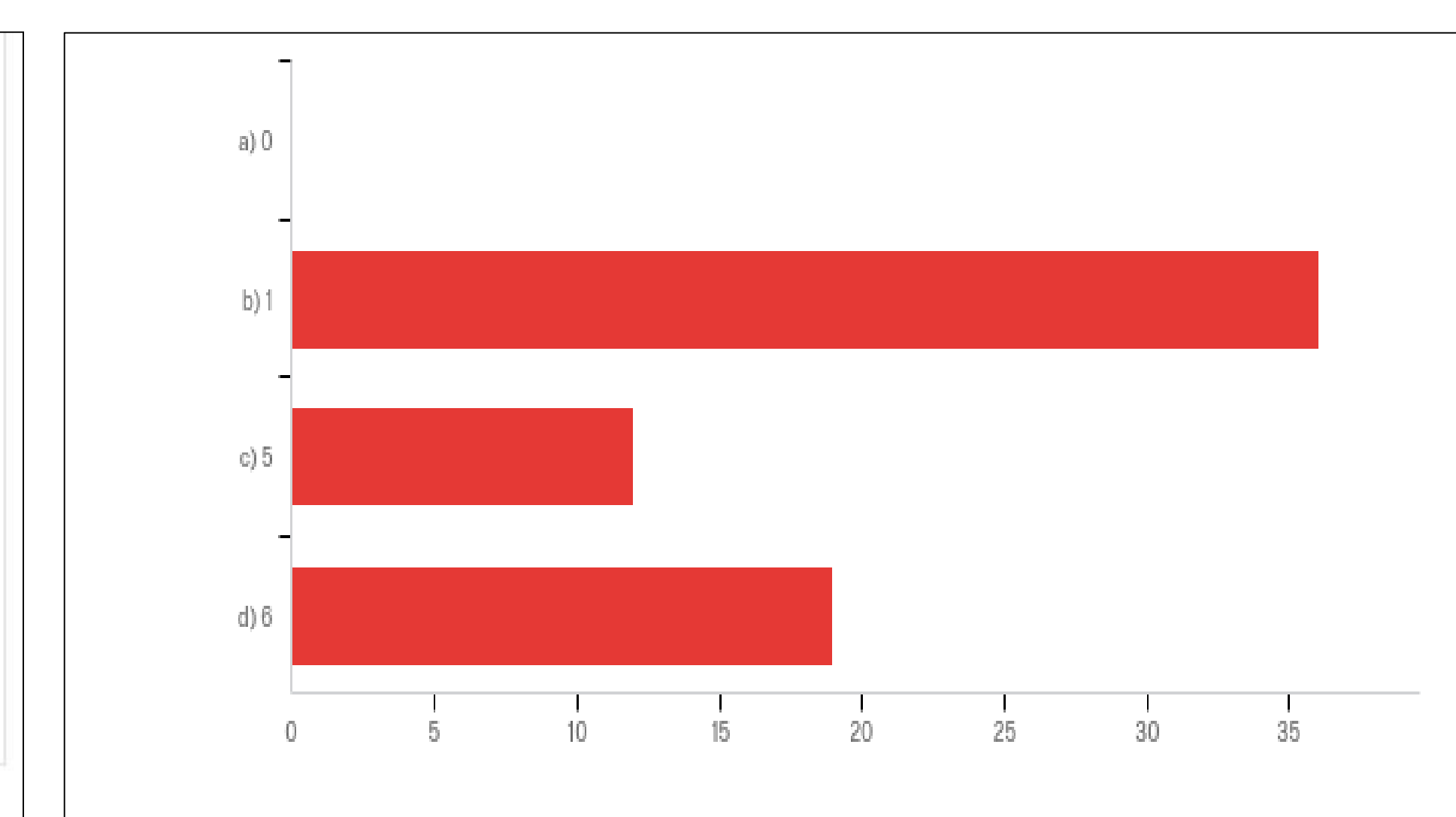


Figure 9: Students' answers in pretest

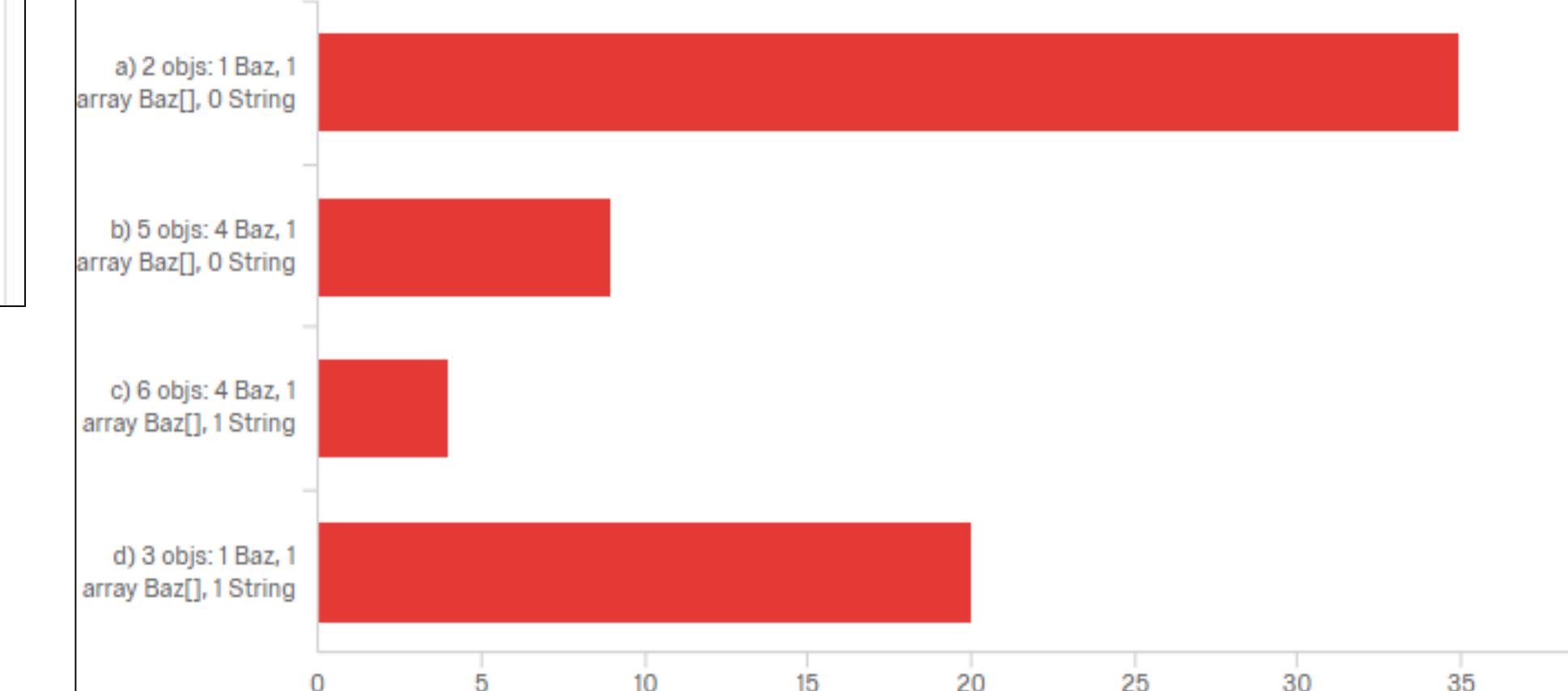


Figure 10: Students' answers for correspond question in posttest