CHALMERS
EXAMINATION / TENTAMEN

Course code/kurskod	Course name/kurskod			
DIT-043	Object Oriented Programming			
Anonymous code Anonym kod		Examination date Tentamensdatum	Number of pages Antal blad	Grade Betyg
673		03/01/2022	6	5

* I confirm that I've no mobile or other similar electronic equipment available during the examination.
Jag intygar att jag inte har mobiltelefon eller annan liknande elektronisk utrustning tillgänglig under eximinationen.

Solved task Behandlade uppgifter No/nr		Points per task Poäng på uppgiften	Observe: Areas with bold contour are to completed by the teacher. Anmärkning: Rutor inom bred kontur ifylles av lärare.
1	✓	15	
2	✓	27.5	
3	✓	32	
4	✓	15	
5			
6			
7			
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11			
12			
13			
14			
15			
16			
17			
Bonus poäng			
Total examination points Summa poäng på tentamen		90	

3

CHALMERS	Anonymous code Anonym kod 673	Points for question (to be filled in by teacher) Poäng på uppgiften (ifylles av lärare) 15	Consecutive page no. Löpande sid nr 1 Question no. Uppgift nr 1

$\frac{15}{15}$

Awesomely done! :)

1)

```
1  | constructor: total: 2
2  | constructor: total: 0
3  | constructor: total: -4
4  | mA has num1 = -1   num2 = -2
5  | mB has num1 = 4    num2 = -4
6  | mC has num1 = 1    num2 = 2
7  | method: num1 = -6  num2 = -2  total = -12
8  | method: num1 = ~~8~~11  num2 = 8  total = 7
9  | main: num1 = 8   num2 = 3   total = 7
10 | mA has num1 = 1   num2 = 2
11 | mA has num1 = 10  num2 = 2
12 | mC has num1 = 10  num2 = 2
14 | mA has num1 = 8   num2 = 3
15 | mC has num1 = 8   num2 = 3
```

missed to add the constructor println. Didn't want to redo the entire thing.

```
13 | costructor: total: ~~5~~7
```

That's okay :)

Didn't have time to redo it :(

Answer only one question on this page. Do not write on the back of this paper

3

CHALMERS | Anonymous code / Anonym kod: ~~673~~ 673 | Points for question (to be filled in by teacher) / Poäng på uppgiften (ifylles av lärare): 12,5 | Consecutive page no. / Löpande sid nr: 1 | Question no. / Uppgift nr: 2

2.1

```
public class Post{

1   private String content;
    private int numOfLikes;

    public Post(String content)throws Exception{

        if(content.isEmpty()){ throw new Exception("Content cannot be
        empty");}

3       this.content = content;
        numOfLikes = 0;
    }

    public void like(){ this.numOfLikes += +1}

    public void dislike(){
1,5     if(this.numOfLikes != 0)
          this.numOfLikes += -1
    }

2   public void editPost(String newContent) throws Exception{
        if(newContent.isEmpty();){ throw new Exception("Content
          cannot be empty");}
        else this.content = newContent;
    }

    public int getLenght(){ return this.content.lenght(); }

    public String getContent(){ return this.content; }

    public int getNumOfLikes(){ return this.numOfLikes; }

    public String toString(){
        return content + ": " + numOfLikes + " likes."
    }
```

2.2
5

I disagree with Ann because only the String sponsor is immutable a sponsored ~~p~~ post still inherits the attributes from the superclass, which can still be modified.

3

CHALMERS	Anonymous code / Anonym kod	Points for question (to be filled in by teacher) / Poäng på uppgiften (ifylles av lärare)	Consecutive page no. / Löpande sid nr / Question no. / Uppgift nr
	673	15	2 / 2

2.3 One advantege of polymorphism is that you can use the superclass reference and store all of the references in the same list and downcast when you need to use a certain method that is only available for that specific sub-class reference.

5

One advantage that interfaces have over ~~in~~ inheritance is that it doesn't weaken the encapsulation like inheritance does. An interface only has abstract methods and static constants so no attributes can be accessed.

5

One advantage inheritance has over interfaces is the high re-usability of code. So if the subclass and the superclass has attributes or metheds in common, you only need to have the code in the superclass.

5

3

CHALMERS	Anonymous code Anonym kod 673	Points for question (to be filled in by teacher) Poäng på uppgiften (ifylles av lärare) 10	Consecutive page no. Löpande sid nr 1 Question no. Uppgift nr 3

3.1

```
public  User(String username, int birthyear) throws Exception{
  if( username.isEmpty();){ throw new Exception("Invalid user
      information. Users name cannot be empty.");
  }
  this.username = username;

  if(birthyear<2004){throw new Exception("Invalid User
     information. The user must be born after 2004");
  }
  this.birthYear = birthyear;

  friends = new List<String>();
  posts = new List<Post>();
}

public User(String username, int birthyear, List<String> friendList)
  throws Exception{
  if(username.isEmpty();){throw new Exception("Invalid user
     information. Users name cannot be empty");
  }
   this.username = username;

  if(birthyear < 2004){throw new Exception("Invalid user
     information. The user must be born after 2004");
  }
   this.birthYear = birthyear;
     friends = ~~new List<String>~~(friendList);

     posts = new List<Post>();
}
```

~~public String getLongestPost() throws Exception{~~

10/10

Perfect job

Answer only one question on this page. Do not write on the back of this paper
Behandla endast en uppgift på detta blad. Skriv ej på baksidan

3

CHALMERS	Anonymous code / Anonym kod	Points for question (to be filled in by teacher) / Poäng på uppgiften (ifylles av lärare)	Consecutive page no. / Löpande sid nr
	673	21	2
			Question no. / Uppgift nr: 3

3.2

```
public String getLongestPost() throws Exception{
        if(posts.size(); == 0); throw new Exception("User did not
            create any posts yet.");}
        String longestPost = "";
        for (Post post : posts){
            if(post.getLength();>=longestPost.length();){
                longestPost = post.getContent();
            }
        }
        longestPost = longestPost + "(has "+longestPost.lenghth()+
                                    " characters)");
        return longestPost;
}
```

7/7

3.3

```
public List<String> getMostLikedPosts() throws Exception{
        if(posts.size(); == 0){throw new Exception("User did not
            create any posts yet.");
        }
        List<String> returnList = new List<>();
        int mostLikes = 0;

        for (Post post : posts){
            if (post.getNumOfLikes > mostLikes){
                mostLikes = post.getNumOfLikes;
                returnList.clear();
                returnList.add(post.getContent());
            }
            else if (post.getNumOfLikes == mostLikes){
                returnList.add(post.getContent());
            }
        }
        return returnList;
}
```

7/8

7/15

how does user create posts? Aggregation?

3.4 User and Post class is in a composition relationship. The User is the composite and post is the component. The reason for ~~t~~ this is that each user object has a list that contains Post objects, there for we can use methods of the Post class from within the user objects/Class

Answer only one question on this page. Do not write on the back of this paper

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CHALMERS	Anonymous code / Anonym kod	Points for question (to be filled in by teacher) / Poäng på uppgiften (ifylles av lärare)	Consecutive page no. / Löpande sid nr / Question no. / Uppgift nr
	673	15	4

Adding spacing for readability.

4

1 Alan Turing: Points = 190. Credits: 8012
2 Ada Lovelace: Points = 160. Credits: 610
3 Mary Keller: Points = 210. credits: 4394
4 Grace Hopper: Points = 50. Credits: 2014

15/15