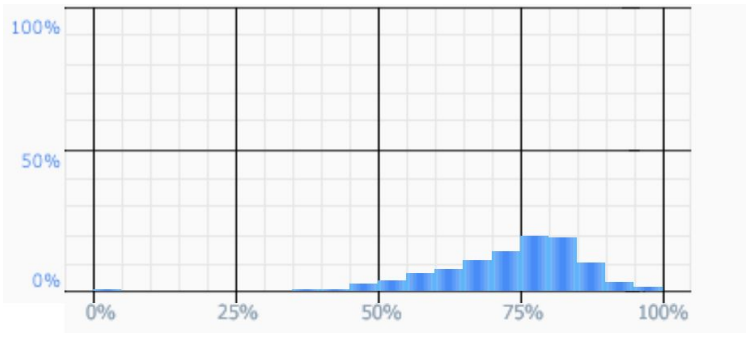
Mid-term

Statistics

90-100: 8
80-90: 52
70-80: 60
60-70: 32
50-60: 18
< 50: 8



Minimum:	0 %
Maximum:	99.09 %
Average:	73.34 %
Mode:	84.55 %
Median:	75.68 %
Standard Deviation:	12.92 %

A-Q1, B-Q3, C-Q2

1. Which ones of the following type casts do **not** require an explicit cast operator ?

A) long to int
B) float to double
C) int to double
D) double to long
E) Char to string
F) Superclass to subclass
G) Subclass to superclass
H) Class to its implemented interface
I) Interface to its implementing class

Answer: **8'**

B, C, G, H	each 2'

A-Q2, B-Q2, C-Q3

2. Read the following code,

```
int a = 1;
int b = 2;
int c = 3;
int d = 4;
int e = 5;
a=b *= c /= d = e ++;
```

What will be the values of a b c d e after running the code?

Answer: **10'**

a=0,b=0,c=0,d=5,e=6	each 2'

A-Q3, B-Q2, C-Q5

3. Read the following code,

```
String e1 = new String("");
String e2 = new String("");
StringBuilder e3 = new StringBuilder();
boolean b1 = e1.isEmpty();
boolean b2 = e1==null;
boolean b3 = e1=="";
boolean b4 = e1==new String("");
boolean b5 = e1==e2;
boolean b6 = e1.equals(e2);
boolean b7 = e3.toString().equals("");
```

What will be the boolean values of b1, b2, b3, b4, b5, b6, and b7 after running the code?

Answer: **7'**

b1=true,b2=false,b3=false,b4=false,b5=false,b6=true,b7=true each 1'

A-Q4, B-Q5, C-Q1

4. Read the following code,

```
int a = 1;
int b = 2;
int c = ++a > b-- ? ++b : a++;
int d;
switch(c)
{
case 3:
        d = 5;
case 2:
        d = 3;
case 1:
        d = 9;
        break;
case 5:
        d = 7;
default:
        d = 1;
}
```

What will be the values of a b c d after running the code?

Answer: **8'**

a=3,b=1,c=2,d=9
each 2'

A-Q5, B-Q4, C-Q4

5. Read the following code,

```
int a = 3;
do while (--a>0) System.out.println(a); while (false);
```

What will be the terminal output after running the code?

Answer: **6'**

Line 1:	2
Line 2:	1
Line 3:	

A-Q6, B-Q6, C-Q7

6. MySuperclass, MySubclass and MySubsubclass are defined as below:

```
public class MySuperclass {
   int value1 = 5;
   float value2 = 6;
   static long value3;

   MySuperclass() {
     System.out.println("in  MySuperclass()");
   }
   MySuperclass(int v1) {
     this();
     System.out.println("in  MySuperclass(int)");
     value1 = v1;
   }
}
```

```
class MySubclass extends MySuperclass{
  MySubclass()
  {
     super(123);
     System.out.println("in MySubclass()");
  }
}

class MySubsubclass extends MySubclass {
  MySubsubclass()
  {
     System.out.println("in MySubsubclass()");
  }
}
```

What is the terminal output after running the following code?

```
MySubsubclass ssObj = new MySubsubclass();
System.out.println(ssObj.value1);
System.out.println(ssObj.value2);
System.out.println(ssObj.value3);
```

Answer: **10'**

Line 1:	in MySuperclass()	1'
Line 2:	in MySuperclass(int)	1'
Line 3:	in MySubclass()	1'
Line 4:	in MySubsubclass()	1'
Line 5:	123	2'
Line 6:	6.0	2'
Line 7:	0	2'

A-Q7, B-Q7, C-Q8

7. Read the following code:

```
class MySuperclass {
        void method1() {//ⓐ
           //…
        }
        int method1() {//ⓑ
           //…
        }
        void method1(int m) {//ⓒ
           //…
        }
        void method2() {//ⓓ
           //…
        }
}
```

```
class MySubclass extends MySuperclass{
        void method1() {//ⓔ
           //…
        }
        void method3(int m) {//ⓕ
           //…
        }
}
```

Does the above code compile and why?
Which methods are overloaded?
Which methods are overridden?

A-Q7, B-Q7, C-Q8 - answer

Does the above code compile and why?

Answer: **2**

No, ⓐ and ⓑ have the same method name, same input arguments. They are regarded as duplicate methods, not overloaded.

Which methods are overloaded?

Answer: **4**

ⓐ void MySuperclass.method1() 2' each
ⓒ void MySuperclass.method1(int)

Which methods are overridden?

Answer: **4**

ⓐ void MySuperclass.method1() 2' each
ⓔ void MySubclass.method1()

A-Q8, B-Q9, C-Q9

8. MySuperclass, MySubclass and MySubsubclass are defined as below:

```
class MySuperclass {
   void method1()
   {
      System.out.println("in
        MySuperclass.method1()");
   }
}
```

```
class MySubclass extends MySuperclass{
   void method1()
   {
      System.out.println("in MySubclass.method1()");
   }
}

class MySubsubclass extends MySubclass {
   void method1()
   {
      super.method1();
      System.out.println("in MySubsubclass.method1()");
   }
}
```

What is the terminal output after running the following code?

```
MySuperclass obj1 = new MySuperclass();
MySuperclass obj2 = new MySubclass();
MySuperclass obj3 = new MySubsubclass();
MySubclass obj4 = new MySubclass();
MySubsubclass obj5 = new MySubsubclass();
MySubclass obj6 = (MySubclass)obj2;
MySubsubclass obj7 = (MySubsubclass)obj3;

obj1.method1();
obj2.method1();
obj3.method1();
obj4.method1();
obj5.method1();
obj6.method1();
obj7.method1();
```

A-Q8, B-Q9, C-Q9 - answer

Answer: **14’**

obj1.method1() output:	in MySuperclass.method1() 2’ each
obj2.method1() output:	in MySubclass.method1()
obj3.method1() output:	in MySubclass.method1() in MySubsubclass.method1()
obj4.method1() output:	in MySubclass.method1()
obj5.method1() output:	in MySubclass.method1() in MySubsubclass.method1()
obj6.method1() output:	in MySubclass.method1()
obj7.method1() output:	in MySubclass.method1() in MySubsubclass.method1()

A-Q9, B-Q10, C-Q6

9. MySuperclass, MySubclass and MySubsubclass are defined as below:

```
class MySuperclass {
    int value1 = 5;
    float value2 = 6;
    static long value3 = 100;

    MySuperclass() { }

    MySuperclass(int v1) {
        value1 = v1;
    }
}
```

```
class MySubclass extends MySuperclass{
MySubclass()
    {
        this.value2 = 51;
    }
}

class MySubsubclass extends MySubclass {
    MySubsubclass()
    {
        this.value3 = 20;
    }
}
```

A-Q9, B-Q10, C-Q6 - answer

What is the terminal output after running the following code?

```
MySuperclass obj1 = new MySuperclass(9);
MySubclass obj2 = new MySubclass();
MySubsubclass obj3 = new MySubsubclass();
System.out.println("obj1: v1="+obj1.value1++ + ", v2="+obj1.value2++ + ", v3=" +
obj1.value3++);
System.out.println("obj2: v1="+obj2.value1++ + ", v2="+obj2.value2++ + ", v3=" +
obj2.value3++);
System.out.println("obj3: v1="+obj3.value1++ + ", v2="+obj3.value2++ + ", v3=" +
obj3.value3++);
```

Answer: **10’ each v value 1’, string 1’**

Line 1:	obj1: v1=9, v2=6.0, v3=20
Line 2:	obj2: v1=5, v2=51.0, v3=21
Line 3:	obj3: v1=5, v2=51.0, v3=22

A-Q10, B-Q8, C-Q10

10. class A and method func is defined as below:

```
class A {
        public int a = 0;
}
```

```
static void func(A a1, A a2, int a, int b)
{
        a++;

        //swap a1.a with b
        int temp = a1.a;
        a1.a = b;
        b = temp;

        a1.a++;
        a2.a++;
}
```

What is the terminal output after running the following code?

```
        A objA= new A();
        int b = 5;
        func(objA, objA, objA.a, b);
        System.out.println("a=" + objA.a + ",b=" + b);
```

Answer: **8’**

a=7, b=5 4’ each

A-Q11, B-Q11, C-Q11

11. What are the basic software process activities? **4**

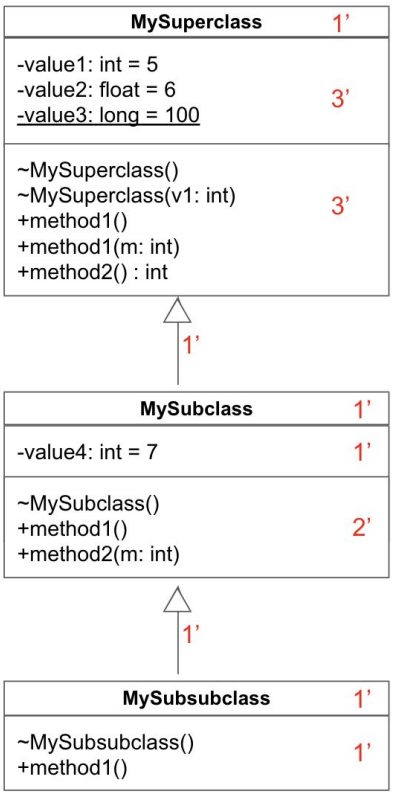
Software Specification (or Requirement Engineering), 1’
Software Development (or Software Design and Implementation) 1’
Software Validation, 1’
Software Evolution, 1’

A-Q12, B-Q12, C-Q12

12. Draw the class diagram for the following code: **15’**

```
class MySuperclass {
        private int value1 = 5;
        private float value2 = 6;
        private static long value3 = 100;

        MySuperclass() { }
        MySuperclass(int v1) { }

        public void method1() { }
        public void method1(int m) {}
        public int method2() {}
}
```

```
class MySubclass extends MySuperclass{
        private int value4 = 7;

        MySubclass() { }

        public void method1() {
            //……
        }
        public void method2(int m) {
            //……
        }
}
class MySubsubclass extends MySubclass
{
        MySubsubclass() { }

        public void method1() {
            //……
        }
}
```



Grader Contact

A1~A58, C45~C56: Tony, lint50@mcmaster.ca

B1~B57, C32~C44: Shiyi, yangs192@mcmaster.ca

C1~C31 and other: Hao, zhangh394@mcmaster.ca