Work Time: 30min

Please copy the subjects and then close your laptops.

Default (1p).

1 (3p). Given the following Java collection:

List<Integer> numbers = Arrays.asList(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14,15);

Using Java functional style (Java streams), please write a Java stream program that is doing the following operations in the following order:

a)eliminates all the numbers which neither are multiple of 3 nor of 4;

b)transform each remaining number into its succesor modulo 3;

c)compute the sum modulo 2 of the remaining numbers

2 (3p). Given the following four classes in Java:

```
class A implements D{...}   class B extends A implements D {...}
class C extends A implements D {...}   interface D {...}
class Amain{
     D  method1(ArrayList<.....> list) {  if list.isEmpty() return null; else return list.get(1);}
     void method2(ArrayList<.....> ) {  list.add(null);}
    void method3(){
        ArrayList<A> listA=new ArrayList<A>(); listA.add(new B());listA.add(new B());
        ArrayList<B> listB = new ArrayList<B>(); listB.add(new B());listB.add(new B());
        ArrayList<C> listC = new ArrayList<C>(); listC.add(new C()); listC.add(new C());
       this.method1(listA); this.method1(listB); this.method1(listC);
       this.method2(listA); this.method2(listB; this.method2(listC);
     }
}
```

Please complete the most specific wildcard types for the class Amain methods (method1 and method2) such that the entire program is correct. Please justify your solution. If it is not possible to find a solution please explain the reason.

3 (3p). Is the following Java code correct? Please explain your answer.

```
interface  In1 { int getS1(int);}
class A iplements In1 {
    int f1;
    static int s1=0;
    public A(int a)  { this.f1=a*s1;s1=s1+1; }
    static int getS()  { return getS1(f1); }
    int getS1()  {return s1;}
}
```