# Facit och kommentarer till tentamen 2023-08-14 i DA4003

## Del 1: flervalsfrågor (1p per fråga)

1. B
2. B, D
3. C
4. C
5. B, E
6. A, C, E
7. D
8. C

## Del 2: kodfrågor

9. (a) Möjlig lösning:

```
int calculate(int* p, int* q, int n) {

  int out = 0;

  for (int i = 0; i < n; i++) {
    out += *(p + i) * *(q + i);
  }

  return out;

}
```

(b) Möjlig lösning:

```
int calculate(int* p, int* q, int n) {

  int out = 0;
  int i = 0;

 loop:
  if (i < n) {
    out += *(p + i) * *(q + i);
    i++;
    goto loop;
  }

  return out;

}
```

10. (a) Möjlig lösning:

```
class File {

    public String name;
    public String ending;

    public File(String n, String e) {
        name = n;
```

```
        ending = e;
    }

    public String toString() {
        return name + "." + ending;
    }

}
```

(b) Möjlig lösning:

```
class Document extends File {

    private String content;

    public Document(String n, String c) {
        super(n,"doc");
        content = c;
    }
}
```

(c) Möjlig lösning:

```
class Song extends File {

    public Song(String artist,String song) {
        super(artist + " - " + song,"mp3");
    }
}
```

**11**. (a) Möjlig lösning:

```
calculate :: [Int] -> [Int] -> Int -> Int
calculate [] _ _ = 0
calculate _ [] _ = 0
calculate _ _ 0  = 0
calculate (x:xs) (y:ys) n = x * y + calculate xs ys (n-1)
```

(b) Möjlig lösning:

```
calculate :: [Int] -> [Int] -> Int -> Int
calculate xs ys n = sum (take n (zipWith (*) xs ys))
```

**12**. (a) Möjlig lösning:

```
f([],[]).
f([X|XS],[X,X|YS]) :- f(XS,YS).
```

(b) Möjlig lösning:

```
calculate([],_,_,0).
calculate(_,[],_,0).
calculate(_,_,0,0).
calculate([X|XS],[Y|YS],N,R) :-
    N1 is N - 1,
    calculate(XS,YS,N1,R1),
    R is X * Y + R1.
```