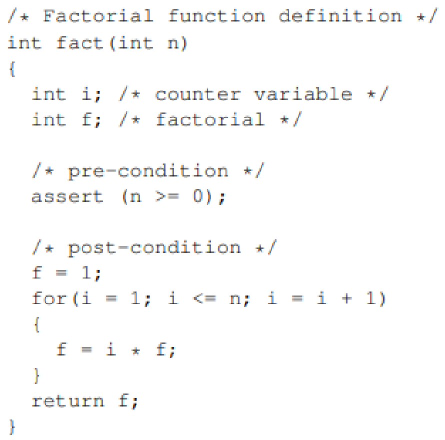
1) (Text answer) Consider the following program for computing factorial numbers:



```
/* Factorial function definition */
int fact(int n)
{
  int i; /* counter variable */
  int f; /* factorial */

  /* pre-condition */
  assert (n >= 0);

  /* post-condition */
  f = 1;
  for(i = 1; i <= n; i = i + 1)
  {
    f = i * f;
  }
  return f;
}
```

a) How many arithmetic operations (+, -, *, /) are required to compute *fact(5)*?

I programmet bliver operatorerne <=, + og * brugt.

Når *fact(5)* vil blive udregnet vil operatoren * blive brugt 5 gange. <= vil blive brugt 6 gange (Fordi når i = 6 sammenligner loopet i med n og ser conditionen er false og går ud af loopet der). Operatoren + bliver brugt 5 gange.

b) How many arithmetic operations are required to compute *fact(n)* for any positive integer *n*?

For at udregne *fact(n)* bruger der brugt $n * 3 + 1$ gange operator.

2) (Code answer) Implement an insertion sort function that is used for a singly *linked list* of integers, so that the integers are sorted in the final linked list from smallest to largest. The function should have the following signature: *node* sort(node* list).*

Program: https://github.com/Aarhus-University-ECE/assignment-8-MikkelHojbjerg/tree/main/src

3) (Code answer) Magter ikke at skrive den lange opgave beskrivelse

Program: https://github.com/Aarhus-University-ECE/assignment-8-MikkelHojbjerg/tree/main/src