

CLASSICAL AND QUANTUM COMPUTING EXERCISE XII

Consider the following C++ program.

```
// exp1.cpp

#include <stdio.h>

void main()
{
    int N = 9009;
    int a[9009];
    int x = 0;
    int n;
    n = N;

    for(n=1;n<N;n++) a[n]=1;
    a[1]=2;

    for(;N > 9; printf("%d",x))
    for(n=N--;--n>0;)
    {
        a[n]=x%n;
        x=10*a[n-1]+x/n;
    }
}
```

Describe the algorithms implemented in the program. Generate the assembler code for the programs. Explain the assembler code. For example, for the GNU C++ compiler we use

```
g++ -S exp1.cpp
```

and for the Microsoft Visual C++ compiler we use

```
cl /Faexp1.s exp1.cpp
```

to obtain the assembler code in the file exp1.s.