Problems

19.1 There is a flaw in the virus program of Figure 19.1. What is it?
19.2 The question arises as to whether it is possible to develop a program that can analyze a piece of software to determine if it is a virus. Consider that we have a program $D$ that is supposed to be able to do that. That is, for any program $P$, if we run $D(P)$, the result returned is $\text{TRUE}$ ($P$ is a virus) or $\text{FALSE}$ ($P$ is not a virus). Now consider the following program:

```plaintext
Program CV :=
   (...
   main-program :=
        {if $D(CV)$ then goto next:
            else infect-executable;
        }
   next:
   )
```

In the preceding program, infect-executable is a module that scans memory for executable programs and replicates itself in those programs. Determine if $D$ can correctly decide whether $CV$ is a virus.