Problem Set 1
Course **Safe and Secure Software**
(Winter Term 2016)

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Due Date: 18 Oct 2016, 1:30 PM, via email to `eik.list(at)uni-weimar.de`.

Goal of This Problem Set: Setup your programming environment and get familiar with Ada and your toolchain by solving small problems.

Task 1 – Setup Ada (No Credits)

a) Download and install the GNAT GPL Ada compiler from AdaCore GNAT GPL. On Debian GNU/Linux-based systems, GNAT can be installed by the following command: `#aptitude install gnat-4.9`

b) Find an appropriate editor/IDE to write your Ada source code, e. g. Vim, Emacs, Sublime, etc. Good Ada-specific IDEs for later development are, for example, GPS or the GNATBench plugin for Eclipse (`http://libre.adacore.com/download/`).

Task 2 – First Steps (4 Credits)

Read Chapters 1 and 2 of John English and fulfill the following tasks:

a) Implement a simple Hello World program in Ada.

b) Solve Exercises 2.3 and 2.4.

Task 3 – User Interaction (4 Credits)

Read Chapter 3 of John English and solve Exercises 3.2, 3.3, and 3.4.

Task 4 – Control Structures in Ada (4 Credits)

a) What do the loops in the following program fragments do?

b) Does the compiler generate warnings or error messages? If so, why?

```
1 with Ada.Text_IO;
2
3 Ada.Text_IO.Put_Line("1st_loop");
4 for I in 1 .. 3 loop
5   Ada.Text_IO.Put(Integer'Image(I));
6 end loop;
7
8 Ada.Text_IO.Put_Line("2nd_loop");
9 for I in 3 .. 1 loop
```

```
10    Ada.Text_IO.Put(Integer'Image(I));
11  end loop;
12
13  Ada.Text_IO.Put_Line("3rd_loop");
14  for I in reverse 1 .. 3 loop
15    Ada.Text_IO.Put(Integer'Image(I));
16  end loop;
17
18  Ada.Text_IO.Put_Line("4th_loop");
19  for I in reverse 3 .. 1 loop
20    Ada.Text_IO.Put(Integer'Image(I));
21  end loop;
```