This document presents instructions to install and use BIAL with Linux (Ubuntu or Mint) operational system.

The following describes how to install BIAL in a computer named "desk" by a user named "john".

1) Before installing BIAL:

Verify the version of g++ installed in your computer, by typing in the terminal:

```
john@desk:~$ g++ --version
```

Verify if the present version is greater or equal to 4.8 as bellow:

```
g++ (Ubuntu 4.8.1-2ubuntu1~12.04) 4.8.1
Copyright (C) 2013 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There
is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
```

If your g++ version is lower than 4.8, you will need to install a newer version. Follow the instructions bellow, typing your password when required and waiting for the download and installation:

```
john@desk:~$ sudo add-apt-repository ppa:ubuntu-toolchain-
r/test
john@desk:~$ sudo apt-get update
john@desk:~$ sudo apt-get install g++-4.8
```

The installation does not make g++ 4.8 the system default. To make it the default compiler follow the instructions:

```
john@desk:~$ sudo update-alternatives --remove-all g++
john@desk:~$ sudo update-alternatives --install /usr/bin/g++
g++ /usr/bin/g++-4.8 20
john@desk:~$ sudo update-alternatives --config g++
```

Finaly, you need to install zlib by the following command:

```
john@desk:~$ sudo apt-get install zlib1g-dev
```

2) Working with the library:

Supposing that BIAL is installed in folder `/home/john/work/bial`, you can type the following to access its contents by the terminal:

```
john@desk:~$ cd work/bial
john@desk:~/work/bial$
```

From here you can access the `inc` folder, that contains the library implementation, and the `tst` folder, with some sampling programs.

To compile all sampling programs type:

```
john@desk:~/work/bial$ cd tst
john@desk:~/work/bial/tst$ make
```

Instead, you may also compile only the program of interest, `Image-Convert` for instance, by typing:

```
john@desk:~/work/bial/tst$ make Image-Convert
```

Finally, to run the compiled program, type:

```
john@desk:~/work/bial/tst$ ./bin/Image-Convert
```

Some of the sampling programs require parameters. They will show you the instructions if you run them without the required parameters. In the case of `Image-Convert`, an input image and an output image must be provided. For instance:

```
john@desk:~/work/bial/tst$ ./bin/Image-Convert res/macaw.pgm
dat/macaw.bmp
```

The folder `tst/res` contains several sampling images that can be used by the sampling programs.