# Introdução a linux, Configuração e operação de servidores - 2022/2

## Atividade 1

### Instalação de um programa via código fonte

Programa escolhido: Plink
https://zzz.bwh.harvard.edu/plink/download.shtml

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**Passos instalar plink**

Baixar:

```
wget -P /home/lucasf/Desktop/
https://zzz.bwh.harvard.edu/plink/dist/plink-1.07-src.zip
```

Dezipar:

```
unzip plink-1.07-src.zip
```

Não existe um arquivo configuration, entao vamos direto para o make:

Dentro da pasta dezipadas façamos:

```
make
If 'make' is not a typo you can use command-not-found to lookup the
package that contains it, like this:
    cnf make
```

Verificamos:

```
cnf make

The program 'make' can be found in the following package:
  * make [ path: /usr/bin/make, repository: zypp (repo-oss) ]

Try installing with:
    sudo zypper install make
```

Vamos instalar o make:

```
sudo zypper install make
```

Recebemos:

```
sudo zypper install make
[sudo] password for root:
Retrieving repository 'Update repository with updates from SUSE Linux Enterprise 15' metadata
.........................................[done]
Building repository 'Update repository with updates from SUSE Linux Enterprise 15' cache
..............................................[done]
Loading repository data...
Reading installed packages...
Resolving package dependencies...

The following recommended package was automatically selected:
  make-lang

The following 3 NEW packages are going to be installed:
  make make-lang site-config

3 new packages to install.
Overall download size: 462.2 KiB. Already cached: 0 B. After the operation, additional 1.3 MiB will be used.
Continue? [y/n/v/...? shows all options] (y): y
Retrieving package make-4.2.1-7.3.2.x86_64                                    (1/3),
281.7 KiB (394.6 KiB unpacked)
Retrieving: make-4.2.1-7.3.2.x86_64.rpm
...............................................................[done]
Retrieving package make-lang-4.2.1-7.3.2.noarch                              (2/3),
164.0 KiB (886.1 KiB unpacked)
Retrieving: make-lang-4.2.1-7.3.2.noarch.rpm
............................................................[done (2.6 KiB/s)]
Retrieving package site-config-0.2-bp154.1.19.x86_64                         (3/3),
16.5 KiB ( 21.4 KiB unpacked)
Retrieving: site-config-0.2-bp154.1.19.x86_64.rpm
............................................................[done]

Checking for file conflicts:
..................................................................[done]
(1/3) Installing: make-4.2.1-7.3.2.x86_64
..............................................................[done]
(2/3) Installing: make-lang-4.2.1-7.3.2.noarch
............................................................[done]
(3/3) Installing: site-config-0.2-bp154.1.19.x86_64
..........................................................[done]
lucasf@vmlucas:~/Desktop/plink-1.07-src>
```

Sabemos que o plink necessidade de um compilador c++:

*"PLINK is also distributed as C/C++ source code, which you can compile for your particular system using any standard C/C++ compile"*

Geralmente a versão mais recente é que contém as correções de bugs e na documentação não especifica nenhuma versão em específico, portanto vamos nos certificar que temos a mais atual:

—----------------------------------

```
cnf g++
```

```
The program 'g++' can be found in the following package:
  * gcc-c++ [ path: /usr/bin/g++, repository: zypp (repo-oss) ]

Try installing with:
    sudo zypper install gcc-c++sud
```

————————————————————————

```
gcc -V
If 'gcc' is not a typo you can use command-not-found to lookup the
package that contains it, like this:
    cnf gcc
lucasf@vmlucas:~> cnf gcc

The program 'gcc' can be found in the following package:
  * gcc [ path: /usr/bin/gcc, repository: zypp (repo-oss) ]

Try installing with:
    sudo zypper install gcc
```

————————————————————————

Ou seja, não temos nenhuma versão instalada.

Façamos então:

```
sudo zypper install gcc-c++
```

```
Loading repository data...
Reading installed packages...
Resolving package dependencies...

The following 17 NEW packages are going to be installed:
  gcc gcc7 gcc7-c++ gcc-c++ glibc-devel libasan4 libatomic1 libcilkrts5 libitm1 liblsan0 libmpx2 libmpxwrappers2
libstdc++6-devel-gcc7
  libtsan0 libubsan0 libxcrypt-devel linux-glibc-devel

17 new packages to install.
Overall download size: 38.2 MiB. Already cached: 0 B. After the operation, additional 143.1 MiB will be used.
Continue? [y/n/v/...? shows all options] (y): y
Retrieving package libasan4-7.5.0+r278197-4.30.1.x86_64                                              (1/17),
362.2 KiB (  1.3 MiB unpacked)
Retrieving: libasan4-7.5.0+r278197-4.30.1.x86_64.rpm
..................................................................[done (2.6 KiB/s)]
Retrieving package libcilkrts5-7.5.0+r278197-4.30.1.x86_64                                           (2/17),
65.7 KiB (120.1 KiB unpacked)8
Retrieving: libcilkrts5-7.5.0+r278197-4.30.1.x86_64.rpm
..................................................................[done (2.6 KiB/s)]
Retrieving package libubsan0-7.5.0+r278197-4.30.1.x86_64                                             (3/17),
138.9 KiB (305.2 KiB unpacked)
Retrieving: libubsan0-7.5.0+r278197-4.30.1.x86_64.rpm
..................................................................[done]
Retrieving package linux-glibc-devel-5.14-150400.4.44.x86_64                                         (4/17),
```

```
1.1 MiB (  5.0 MiB unpacked)
Retrieving: linux-glibc-devel-5.14-150400.4.44.x86_64.rpm
..................................................................[done (4.0 KiB/s)]
Retrieving package libatomic1-11.3.0+git1637-150000.1.11.2.x86_64                    (5/17),
22.8 KiB ( 30.2 KiB unpacked)
Retrieving: libatomic1-11.3.0+git1637-150000.1.11.2.x86_64.rpm
...........................................................[done (2.6 KiB/s)]
Retrieving package libitm1-11.3.0+git1637-150000.1.11.2.x86_64                       (6/17),
39.0 KiB ( 94.5 KiB unpacked)
Retrieving: libitm1-11.3.0+git1637-150000.1.11.2.x86_64.rpm
..............................................................[done]
Retrieving package liblsan0-11.3.0+git1637-150000.1.11.2.x86_64                      (7/17),
159.2 KiB (377.1 KiB unpacked)
Retrieving: liblsan0-11.3.0+git1637-150000.1.11.2.x86_64.rpm
...............................................................[done]
Retrieving package libmpx2-8.2.1+r264010-150000.1.6.4.x86_64                         (8/17),
19.4 KiB ( 18.3 KiB unpacked)
Retrieving: libmpx2-8.2.1+r264010-150000.1.6.4.x86_64.rpm
.............................................................[done]
Retrieving package libmpxwrappers2-8.2.1+r264010-150000.1.6.4.x86_64                 (9/17),
18.1 KiB ( 14.2 KiB unpacked)
Retrieving: libmpxwrappers2-8.2.1+r264010-150000.1.6.4.x86_64.rpm
.............................................................[done]
Retrieving package libtsan0-11.3.0+git1637-150000.1.11.2.x86_64                     (10/17),
328.9 KiB (  1.1 MiB unpacked)
Retrieving: libtsan0-11.3.0+git1637-150000.1.11.2.x86_64.rpm
...............................................................[done (1.2 KiB/s)]
Retrieving package libxcrypt-devel-4.4.15-150300.4.4.3.x86_64                       (11/17),
32.4 KiB ( 31.2 KiB unpacked)
Retrieving: libxcrypt-devel-4.4.15-150300.4.4.3.x86_64.rpm
..............................................................[done]
Retrieving package glibc-devel-2.31-150300.41.1.x86_64                              (12/17),
594.9 KiB (  2.5 MiB unpacked)
Retrieving: glibc-devel-2.31-150300.41.1.x86_64.rpm
...............................................................[done (2.6 KiB/s)]
Retrieving package libstdc++6-devel-gcc7-7.5.0+r278197-4.30.1.x86_64                (13/17),
6.7 MiB ( 35.8 MiB unpacked)
Retrieving: libstdc++6-devel-gcc7-7.5.0+r278197-4.30.1.x86_64.rpm
........................................................[done (4.1 MiB/s)]
Retrieving package gcc7-7.5.0+r278197-4.30.1.x86_64                                 (14/17),
19.7 MiB ( 72.6 MiB unpacked)
Retrieving: gcc7-7.5.0+r278197-4.30.1.x86_64.rpm
..............................................................[done (9.3 MiB/s)]
Retrieving package gcc7-c++-7.5.0+r278197-4.30.1.x86_64                             (15/17),
8.9 MiB ( 23.9 MiB unpacked)
Retrieving: gcc7-c++-7.5.0+r278197-4.30.1.x86_64.rpm
............................................................[done (7.3 MiB/s)]
Retrieving package gcc-7-3.9.1.x86_64                                               (16/17),
10.4 KiB (    0   B unpacked)
Retrieving: gcc-7-3.9.1.x86_64.rpm
....................................................................[done (1.2 KiB/s)]
Retrieving package gcc-c++-7-3.9.1.x86_64                                           (17/17),
9.2 KiB (    0   B unpacked)
Retrieving: gcc-c++-7-3.9.1.x86_64.rpm
.................................................................................[done]

Checking for file conflicts:
........................................................................................[done]
( 1/17) Installing: libasan4-7.5.0+r278197-4.30.1.x86_64
.............................................................[done]
( 2/17) Installing: libcilkrts5-7.5.0+r278197-4.30.1.x86_64
.............................................................[done]
( 3/17) Installing: libubsan0-7.5.0+r278197-4.30.1.x86_64
.............................................................[done]
( 4/17) Installing: linux-glibc-devel-5.14-150400.4.44.x86_64
.............................................................[done]
( 5/17) Installing: libatomic1-11.3.0+git1637-150000.1.11.2.x86_64
.............................................................[done]
( 6/17) Installing: libitm1-11.3.0+git1637-150000.1.11.2.x86_64
.............................................................[done]
( 7/17) Installing: liblsan0-11.3.0+git1637-150000.1.11.2.x86_64
.............................................................[done]
```

```
( 8/17) Installing: libmpx2-8.2.1+r264010-150000.1.6.4.x86_64
.............................................................[done]
( 9/17) Installing: libmpxwrappers2-8.2.1+r264010-150000.1.6.4.x86_64
.........................................................[done]
(10/17) Installing: libtsan0-11.3.0+git1637-150000.1.11.2.x86_64
...............................................................[done]
(11/17) Installing: libxcrypt-devel-4.4.15-150300.4.4.3.x86_64
..........................................................[done]
(12/17) Installing: glibc-devel-2.31-150300.41.1.x86_64
..................................................................[done]
(13/17) Installing: libstdc++6-devel-gcc7-7.5.0+r278197-4.30.1.x86_64
.........................................................[done]
(14/17) Installing: gcc7-7.5.0+r278197-4.30.1.x86_64
...................................................................[done]
(15/17) Installing: gcc7-c++-7.5.0+r278197-4.30.1.x86_64
...............................................................[done]
(16/17) Installing: gcc-7.3.9.1.x86_64
..........................................................................[done]
(17/17) Installing: gcc-c++-7-3.9.1.x86_64
......................................................................[done]
lucasf@vmlucas:~/Desktop/plink-1.07-src>
```

Ao verificarmos:

```
gcc -v
Using built-in specs.
COLLECT_GCC=gcc
COLLECT_LTO_WRAPPER=/usr/lib64/gcc/x86_64-suse-linux/7/lto-wrapper
OFFLOAD_TARGET_NAMES=hsa:nvptx-none
Target: x86_64-suse-linux
Configured with: ../configure --prefix=/usr --infodir=/usr/share/info --mandir=/usr/share/man --libdir=/usr/lib64
--libexecdir=/usr/lib64 --enable-languages=c,c++,objc,fortran,obj-c++,ada,go
--enable-offload-targets=hsa,nvptx-none, --without-cuda-driver --enable-checking=release --disable-werror
--with-gxx-include-dir=/usr/include/c++/7 --enable-ssp --disable-libssp --disable-libvtv --disable-libcc1
--disable-plugin --with-bugurl=https://bugs.opensuse.org/ --with-pkgversion='SUSE Linux' --with-slibdir=/lib64
--with-system-zlib --enable-libstdcxx-allocator=new --disable-libstdcxx-pch --enable-version-specific-runtime-libs
--with-gcc-major-version-only --enable-linker-build-id --enable-linux-futex --enable-gnu-indirect-function
--program-suffix=-7 --without-system-libunwind --enable-multilib --with-arch-32=x86_64 --with-tune=generic
--build=x86_64-suse-linux --host=x86_64-suse-linux
Thread model: posix
gcc version 7.5.0 (SUSE Linux)
```

Ao tentar compilar com make, recebemos:

```
make
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c plink.cpp
In file included from zed.h:10:0,
                 from plink.h:27,
                 from plink.cpp:27:
zfstream.h:15:10: fatal error: zlib.h: No such file or directory
 #include "zlib.h"
          ^~~~~~~~
compilation terminated.
make: *** [Makefile:159: plink.o] Error 1
```

Tentei:

`zlib`

```
If 'zlib' is not a typo you can use command-not-found to lookup the package that contains it, like this:
    cnf zlib
```

```
lucasf@vmlucas:~/Desktop/plink-1.07-src> cnf zlib
 zlib: command not found
```

Também tentei:

```
libz
```

```
If 'libz' is not a typo you can use command-not-found to lookup the package that contains it, like this:
    cnf libz
lucasf@vmlucas:~/Desktop/plink-1.07-src> cnf libz
 libz: command not found
```

Procurando pela biblioteca no repositório oficial:





# zlib

## Library implementing the DEFLATE compression algorithm

zlib is a general-purpose lossless data-compression library, implementing an API for the DEFLATE algorithm, the latter of which is being used by, for example, gzip and the ZIP archive format.

Não existe pacote oficial disponível para openSUSE Leap 15.4

Sugestões que encontrei:

You have installed the library in a non-standard location ($HOME/zlib/). That means the compiler will not know where your header files are and you need to tell the compiler that.
You can add a path to the list that the compiler uses to search for header files by using the -I (upper-case i) option.

Also note that the LD_LIBRARY_PATH is for the *run-time* linker and loader, and is searched for dynamic libraries when attempting to run an application. To add a path for the build-time linker use the -L option.
All-together the command line should look like

$ c++ -I$HOME/zlib/include some_file.cpp -L$HOME/zlib/lib -lz

You are missing zlib.h header file, on Linux install it via:
sudo apt-get install libz-dev
As a matter of fact, the module presents as zlib1g-dev in the apt repo, so this is the up-to-date call (Feb 2019):
sudo apt install zlib1g-dev
On Fedora: sudo dnf install zlib-devel (in older versions: sudo dnf install libz-devel)

Por fim, através da interface gráfica, procurei dentro do Yast e instalei o zlib-devel.

`zypper search libz` (para procurar no repositório)

Poderia ter sido feito com

```
sudo zypper install zlib-devel
```

Novamente, com faço o make, ele começa a compilar e

```
lucasf@vmlucas:~/Desktop/plink-1.07-src> make
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c plink.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c options.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c input.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c binput.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c tinput.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c genome.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c helper.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c stats.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c filters.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c locus.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c multi.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c crandom.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c cluster.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c mds.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c output.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c informative.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c assoc.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c epi.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c prephap.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c phase.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c trio.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c tdt.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c sharing.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c genepi.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c sets.cpp
sets.cpp: In member function 'vector_t Set::profileTestScore()':
```

```
sets.cpp:771:37: error: redeclaration of 'std::vector<Individual*>::iterator i'
     vector<Individual*>::iterator i = PP->sample.begin();
                                   ^
sets.cpp:703:12: note: 'int i' previously declared here
  for (int i=0; i<snpset.size(); i++)
           ^
make: *** [Makefile:159: sets.o] Error 1
```

Procurando no google encontrei uma possível solução

simple rename of the variable fixes this :

```
753,754c753,754
<       vector<Individual*>::iterator i = PP->sample.begin();
<       while ( i != PP->sample.end() )
---
>       vector<Individual*>::iterator j = PP->sample.begin();
>       while ( j != PP->sample.end() )
756,757c756,757
<     (*i)->missing = (*i)->flag;
<     ++i;
---
>     (*j)->missing = (*j)->flag;
>     ++j;
```

https://github.com/SAGridOps/SoftwareInstallation/issues/11

Em outro forum encontro a mesma solução:

Hi Andreas,

the problem seems to be that the variable "i" was defined at "sets.cpp:703" (see the for(int i...)) and redefined as 'std::vector<Individual*>::iterator i' at sets.cpp:771.

Probably renaming i to other name solves the problem. For example:

```
    vector<Individual*>::iterator i2 = PP->sample.begin();
    while ( i2 != PP->sample.end() )
     {
       (*i2)->missing = (*i2)->flag;
       ++i2;
     }
```

Saludos,
kix

PS. The code is so dirty, with unused variables,...

https://lists.debian.org/debian-mentors/2012/04/msg00412.html

Fiz a alteração sugerida mas o erro permanecia. Observei que o indicado pelo autor da sugestão, no bloco de código aparecia como `(*i)->missing = (*i)->flag;` enquanto no meu (onde eu havia feito a mudança) estava o contrário `(*i)->flag = (*i)->missing`. Como os meus conhecimentos em C++ são limitados, e achando que talvez essa alteração em um lugar errado possa ter comprometido alguma parte do programa, decidi baixar os arquivos novamente e começar a instalação do 0.

Após feito isso, a execução do erro anterior continuou, porém um novo erro apareceu.

```
Qt: Session management error: networkIdsList argument is NULL
a^C
lucasf@vmlucas:~/Desktop/plink-1.07-src> make
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c sets.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c perm.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c mh.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c genedrop.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c gxe.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c merge.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c hotel.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c multiple.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c haploCC.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c haploTDT.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c poo.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c webcheck.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c qfam.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c linear.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c bmerge.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c parse.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c mishap.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c legacy.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c homozyg.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c segment.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c model.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c logistic.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c glm.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c dcdflib.cpp
dcdflib.cpp: In function 'void E0000(int, int*, double*, double*, long unsigned int*, long unsign
ed int*, double*, double*, double*, double*, double*, double*, double*)':
dcdflib.cpp:6025:60: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-st
rings]
    if(qcond) ftnstop(" SMALL, X, BIG not monotone in INVR");
                                                            ^
dcdflib.cpp: In function 'double dlanor(double*)':
dcdflib.cpp:6401:59: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-st
rings]
    if(xx < 5.0e0) ftnstop(" Argument too small in DLANOR");
                                                           ^
dcdflib.cpp: In function 'double dstrem(double*)':
dcdflib.cpp:6782:66: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-st
rings]
    if(*z <= 0.0e0) ftnstop("Zero or negative argument in DSTREM");
                                                                  ^
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c elf.cpp
elf.cpp: In member function 'void Plink::elfBaseline()':
elf.cpp:1178:30: error: redeclaration of 'std::map<int, int>::iterator i'
     map<int,int>::iterator i = chr_cnt.begin();
                              ^
elf.cpp:1100:12: note: 'int i' previously declared here
  for (int i = 0 ; i < n ; i++ )
           ^
make: *** [Makefile:159: elf.o] Error 1
lucasf@vmlucas:~/Desktop/plink-1.07-src>
```

Não parece que o arquivo dcdflib.cpp apresenta erro, apenas temos um Warning. A mensagem de erro aparece efetivamente em elf.cpp:

```
elf.cpp:1178:30: error: redeclaration of 'std::map<int, int>::iterator i'
```

A mensagem parece similar ao erro passado:

```
sets.cpp:771:37: error: redeclaration of 'std::vector<Individual*>::iterator i'
```

Como o output do erro parece muito similar e não pude encontrar nada na internet de alguém que já tenha cometido esse erro.

Procurando pela linha para fazer a alteração observei que ela é única em todo o código e que não iria gerar o problema que tive na questão anterior.

Reparei também que em `elf.cpp:1178:30` e `sets.cpp:771:37` o 1178 e 771 estão relacionados com a linha do script em que o erro ocorreu. Se eu tivesse observado isso no item anterior eu não teria feito a alteração na linha errada.

Na linha 1178:

```
        map<int,int>::iterator i2 = chr_cnt.begin();
        while ( i2 != chr_cnt.end() )
```

Aparentemente corrigiu, porém o mesmo ocorre em outro arquivo.

```
lucasf@vmlucas:~/Desktop/plink-1.07-src> make
```

```
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c elf.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c dfam.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c fisher.cpp
fisher.cpp: In function 'void fexact(int*, int*, double*, int*, double*, double*, double*, double*, double*,
int*)':
fisher.cpp:261:61: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
     prterr(1, "NROW must be less than or equal to LDTABL.");
                                                           ^
fisher.cpp:267:55: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
   prterr(2, "All elements of TABLE must be positive.");
                                                       ^
fisher.cpp:273:47: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
      "PRT and PRE are set to missing values.");
                                              ^
fisher.cpp: In function 'void f2xact(int*, int*, double*, int*, double*, double*, double*, double*, double*,
double*, int*, int*, int*, int*,
int*, int*, int*, int*, double*, int*, int*, double*, double*, double*, int*, int*, double*)':
fisher.cpp:448:59: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
     prterr(1, "NROW must be less than or equal to LDTABL.");
                                                           ^
fisher.cpp:450:40: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
     prterr(4, "NCOL must be at least 2");
                                        ^
fisher.cpp:501:59: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
      prterr(2, "All elements of TABLE must be positive.");
                                                         ^
fisher.cpp:509:54: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
```

```
           "PRT and PRE are set to missing values.");
                  ^
fisher.cpp:563:66: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
           "Reduce the workspace size, or use `exact = FALSE'.");
                                                       ^
fisher.cpp:751:57: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
           "Try increasing the size of the workspace.");
                                              ^
fisher.cpp: In function 'void f5xact(double*, const double*, int*, int*, int*, int*, double*, int*, int*, int*,
int*, int*, int*, int*, int*)'
:
fisher.cpp:1539:57: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
           "Try increasing the size of the workspace.");
                                              ^
fisher.cpp:1555:52: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
        "Try increasing the size of the workspace.");
                                         ^
fisher.cpp:1597:57: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
           "Try increasing the size of the workspace.");
                                              ^
fisher.cpp: In function 'int iwork(int, int*, int, int)':
fisher.cpp:2001:37: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
       prterr(40, "Out of workspace.");
                                   ^
fisher.cpp: In function 'void isort(int*, int*)':
fisher.cpp:2078:44: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
       prterr(20, "This should never occur.");
                                          ^
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c linput.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c sockets.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c lookup.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c proxy.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c pdriver.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c haploQTL.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c haplohelper.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c haplowindow.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c genogroup.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c nonfounderphasing.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c clumpld.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c genoerr.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c em.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c impute.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c metaem.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c profile.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c nlist.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c whap.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c simul.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c gvar.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c cnv.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c step.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c greport.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c flip.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c qualscores.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c cnvqt.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c cfamily.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c setscreen.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c idhelp.cpp
idhelp.cpp: In member function 'void IDHelper::idHelp()':
idhelp.cpp:775:28: error: redeclaration of 'std::set<IDField*>::iterator j'
   set<IDField*>::iterator j = jf.begin();
                            ^
idhelp.cpp:772:16: note: 'int j' previously declared here
     for (int j = 0 ; j < jointField.size(); j++ )
                ^
make: *** [Makefile:159: idhelp.o] Error 1
```

Corrigindo o erro da mesma forma:

```
        set<IDField*>::iterator j2 = jf.begin();
```

```cpp
        PP->printLOG(" { ");
        while ( j2 != jf.end() )
          {
            PP->printLOG( (*j2)->name + " " );
            ++j2;
          }
```

```
kate idhelp.cpp
Qt: Session management error: networkIdsList argument is NULL
lucasf@vmlucas:~/Desktop/plink-1.07-src> ^C
lucasf@vmlucas:~/Desktop/plink-1.07-src> make
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c idhelp.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c tag.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c hapglm.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c lookup2.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c blox.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c zed.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c dosage.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c annot.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c metaanal.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c r.cpp
In file included from r.cpp:29:0:
Rconnection.h: In constructor 'Rsymbol::Rsymbol(Rmessage*)':
Rconnection.h:203:12: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
    { name=""; fix_content(); }
            ^~
Rconnection.h: In constructor 'Rsymbol::Rsymbol(unsigned int*, Rmessage*)':
Rconnection.h:206:12: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
    { name=""; fix_content(); }
            ^~
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c Rconnection.cpp
In file included from Rconnection.cpp:30:0:
Rconnection.h: In constructor 'Rsymbol::Rsymbol(Rmessage*)':
Rconnection.h:203:12: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
    { name=""; fix_content(); }
            ^~
Rconnection.h: In constructor 'Rsymbol::Rsymbol(unsigned int*, Rmessage*)':
Rconnection.h:206:12: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
    { name=""; fix_content(); }
            ^~
Rconnection.cpp: At global scope:
Rconnection.cpp:56:20: warning: ISO C++ forbids converting a string constant to 'char*' [-Wwrite-strings]
static char *myID= "Rsrv0103QAP1"; /* this client supports up to protocol version 0103 */
                   ^~~~~~~~~~~~~~
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -c zfstream.cpp
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -o plink plink.o options.o input.o binput.o tinput.o
genome.o helper.o stats.o filter
s.o locus.o multi.o crandom.o cluster.o mds.o output.o informative.o assoc.o epi.o prephap.o phase.o trio.o tdt.o
sharing.o genepi.o sets.o pe
rm.o mh.o genedrop.o gxe.o merge.o hotel.o multiple.o haploCC.o haploTDT.o poo.o webcheck.o qfam.o linear.o
bmerge.o parse.o mishap.o legacy.o
homozyg.o segment.o model.o logistic.o glm.o dcdflib.o elf.o dfam.o fisher.o linput.o sockets.o lookup.o proxy.o
pdriver.o haploQTL.o haplohe
lucasf@vmlucas:~/Desktop/plink-1.07-src> make
g++  -O3 -I. -DUNIX -static -DWITH_R_PLUGINS -DWITH_ZLIB -o plink plink.o options.o input.o binput.o tinput.o
genome.o helper.o stats.o filter
s.o locus.o multi.o crandom.o cluster.o mds.o output.o informative.o assoc.o epi.o prephap.o phase.o trio.o tdt.o
sharing.o genepi.o sets.o pe
rm.o mh.o genedrop.o gxe.o merge.o hotel.o multiple.o haploCC.o haploTDT.o poo.o webcheck.o qfam.o linear.o
bmerge.o parse.o mishap.o legacy.o
homozyg.o segment.o model.o logistic.o glm.o dcdflib.o elf.o dfam.o fisher.o linput.o sockets.o lookup.o proxy.o
pdriver.o haploQTL.o haplohe
lper.o haplowindow.o genogroup.o nonfounderphasing.o clumpld.o genoerr.o em.o impute.o metaem.o profile.o nlist.o
whap.o simul.o gvar.o cnv.o
step.o greport.o flip.o qualscores.o cnvqt.o cfamily.o setscreen.o idhelp.o tag.o hapglm.o lookup2.o blox.o zed.o
dosage.o annot.o metaanal.o
r.o Rconnection.o zfstream.o -ldl -lcrypt -lz
```

```
/usr/lib64/gcc/x86_64-suse-linux/7/../../../../x86_64-suse-linux/bin/ld: cannot find -ldl
/usr/lib64/gcc/x86_64-suse-linux/7/../../../../x86_64-suse-linux/bin/ld: cannot find -lcrypt
/usr/lib64/gcc/x86_64-suse-linux/7/../../../../x86_64-suse-linux/bin/ld: cannot find -lz
/usr/lib64/gcc/x86_64-suse-linux/7/../../../../x86_64-suse-linux/bin/ld: cannot find -lm
/usr/lib64/gcc/x86_64-suse-linux/7/../../../../x86_64-suse-linux/bin/ld: cannot find -lc
collect2: error: ld returned 1 exit status
make: *** [Makefile:154: plink] Error 1
```

Com a ajuda do Professor Gerald, descobri que eram erros de biblioteca.

Buscando as bibliotecas pelo zypper search:

```
lucasf@vmlucas:~/Desktop/plink-1.07-src> zypper search ldl
```

```
Repository 'Update repository of openSUSE Backports' is out-of-date. You
can run 'zypper refresh' as root to update it.
Repository 'Update repository with updates from SUSE Linux Enterprise
15' is out-of-date. You can run 'zypper refresh' as root to update it.
Loading repository data...
Reading installed packages...

S | Name                | Summary
| Type
--+--------------------+--------------------------------------------
---+--------
  | ghc-foldl          | Composable, streaming, and efficient left
folds | package
  | ghc-foldl-devel    | Haskell foldl library development files
| package
  | libldl2            | A Simple LDL^T Factorization
| package
  | texlive-oldlatin   | Compute Modern-like font with long s
| package
  | texlive-oldlatin-doc | Documentation for texlive-oldlatin
| package

sudo zypper install ghc-foldl-devel
```

Aparentemente todos as bibliotecas já estavam, mas por conta de uma flag -static

Para mudar isso, no arquivo Makefile, comentamos a linha onde chamava essa flag,
fizemos um make clean e compilamos novamente.

Tudo funcionando agora!

Para finalizar, basta apenas adicionarmos ao PATH para não ser necessário ficar especificando o caminho da pasta onde ele foi instalado.

```
export PATH="/home/lucasf/Desktop/plink-1.07-src:$PATH"
```

Para verificar se o programa está funcionando basta:

```
plink --help --noweb
```

## Referências

- Package: PLINK (including version number) Author: Shaun Purcell URL: http://pngu.mgh.harvard.edu/purcell/plink/ Purcell S, Neale B, Todd-Brown K, Thomas L, Ferreira MAR, Bender D, Maller J, Sklar P, de Bakker PIW, Daly MJ & Sham PC (2007) PLINK: a toolset for whole-genome association and population-based linkage analysis. American Journal of Human Genetics, 81.

- https://lists.debian.org/debian-mentors/2012/04/msg00412.html

- https://github.com/SAGridOps/SoftwareInstallation/issues/11