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# LCG Applications Area Workbook

## Getting Started

Takes the user through procedures for getting a computer account and for ordering and installing computing equipment at CERN.

### Getting started at CERN

#### Getting an Account and Logging In

- Getting an Account
- Checking your account exists
- Connecting to LXPLUS from your linux desktop computer
- Connecting to LXPLUS from your Windows desktop computer

#### Procurement and installation of computing material

- Ordering Equipment
- Installation procedure for a new machine at the user's workplace
- Procedure to request the move of a computer from one room/desk to another
- Procedure to request re-installation of the OS on a computer
- Procedure for requesting the repair of computer equipment

## Developing Software

This section covers the basic tasks without going into design issues.

### Edit, Compile, Link and Run

- Editing, compiling and running code on Unix
- Editing, compiling and running code on Windows

### Storing, Printing and Other Common Activities

- Storing your files safely
- Printing your files
- Accessing your emails

### Debugging Applications

Watching the code execute, and basic problem solving.

- Introduction
- Compile options for Debugging
- Command Line debugger: gdb
- GUI debugger: ddd

## Setting up your software project

- Software Tools and Packages available
- A bug tracker for your application
- How to get a CVS repository: the CERN CVS Central Service
- AFS central files system?
- Setting up XWindows?

## The CERN central computing services

- CERN Computing Rules
  - Linux Central Services
  - Windows Central Services
  - Mail Services
- 

## Ideas for further sections

- Getting started with the LCG environment

## Programming languages and common packages

- C++
- Python
- XML
  
- Boost, Root, Clhep,...

## Developing C++ Applications (TO BE DONE)

Using an OO design approach to make proper use of C++.

- OO Courses and References [☞](#)
- LCG C++ Coding Conventions [☞](#)
- External Class Libraries [☞](#)
- Warning and Error Messages [☞](#)
- Code Wizard: a Tool for Checking Coding Style [☞](#)
- Valgrind: a Tool for Finding Memory Leaks [☞](#)
- Insure++: a Tool for Checking for Memory Misuse [☞](#)

## Testing Software Applications

### Testing Frameworks

- CppUnit, PyUnit, Oval, QMtest
- Valgring, callgrind, kchachegrind

### Procedures for Testing (ON THE WAY)

- Introduction
- Types of Testing
- Test Cases

## Documentation

### Documentation Templates (ON THE WAY)

Templates for the documents needed in software development

- Task lists, project documents
- Use cases, user requirements
- Work plans and reports

### Documentation Tools (TO BE DONE)

Procedures and tools for creating documentation

- Introduction
- Use of Doxygen - simple example
- External Class Libraries

## Configuring your hardware

### Configuring your computer

- Security Recommendations
- Registering your portable computer
- Installing a computer at CERN

## Useful Links

- PH-SFT group Web Site [↗](#)
- LCH Applications Area Web Site [↗](#)
- SPI Workbook [↗](#)

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-- AlbertoAimar - 31 Aug 2005

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