
acm Chapter Event

# IGIT ACM Student Chapter

**(Technical Society of Department of Information Technology, IGIT)**

## presents

# Summer Workshop

## (June / July 2012)

## on

# "Programming Tools and Techniques for Project Development in Linux Environment"

The newly formed IGIT ACM Student Chapter, official Technical Society of Department of Information Technology at Indira Gandhi Institute of Technology (IGIT) shall be conducting a Programming Workshop in the coming Summer Break (June – July, 2012).

Details follows …

**Background:** Acquiring an ability to solve challenging problems through programming based solutions is one of the indispensable skills for a student in the field of Computer Science (CS), Information Technology (IT) and Computer Applications (CA). Programming based solutions requires a familiarity of various tools and techniques, besides the rigorous and sustained practice of programming. The Workshop proposed herewith is a humble effort envisaged in inculcating these skills **early** among students of CSE/IT/CA disciplines so that they are aptly equipped for project development.

**Objectives:** The objectives of the Workshop shall be as follows

(a) Emphasis on problem solving approach.

(b) Familiarization with open source programming tools.

(c) Introduction to advanced programming techniques.

(d) Project development.

**Salient Features**: The salient features of the Workshop are as under.

- Introducing the programming using open source software in a Linux environment, thereby emphasizing the use of open source tools and platforms.
- Inculcating a programming rigor among students which is essential in understanding most of the CS/IT subjects (offered in subsequent semesters) through 'learning by doing' approach.
- Most of the lectures would be undertaken by highly talented and experienced faculty members with a proven track record with both academic and industry experience.
- Most of the topics covered in the Workshop shall be beyond those taught in regular curriculum.

**Pre-requisite:** Workshop expects students to have a basic familiarity (syntax and semantics) with C programming language.

**Target Audience:** Primarily first year students of B.Tech. (CSE/IT) and first year M.C.A. students are encouraged to attend the Workshop. Second year students of B.Tech. (CSE/IT) who could not attend the Workshop last year are also encouraged to participate.

**Duration:** The Workshop is primarily scheduled in the first two weeks of the summer break (i.e. 11$^{th}$ June, 2012 to 22$^{nd}$ June, 2012) wherein the lectures and hands-on sessions of the Workshop shall be conducted. Next, three weeks students are expected to work on their projects. Last week of Summer Break (23$^{rd}$ July, 2012 to 27$^{th}$ July, 2012), participants are expected to come back for project demonstrations.

**Modalities:**

- Workshop shall operate under the aegis of IGIT ACM Student Chapter and in a self-finance mode as far as financial support is concerned.

- To meet the expenses of the Workshop (which includes Honorarium to Resource Persons, Workshop Participant's Stationary Kit, Refreshments, Inauguration and Valedictory Ceremonies and any other Miscellaneous), a nominal registration fee shall be charged.

- Workshop venue shall be IGIT. Lab sessions shall be held in Computer Center, IGIT.

**Registration Fees:**

Rs 2500/= from Non-ACM Student Member
Rs 2000/= from ACM Student Member.

**Detailed Topics (Tentative List):**

**Week 1:**

| Day | Lecture | Topics |
|---|---|---|
| 1 | | |
| | 1 | Inaugural Session |
| | 2 | Linux – Introduction, concepts and installation |
| | 3 | Linux Shell Commands |
| | 4 | Setting up Programming Environment |
| | | |
| 2 | | |
| | 1 | Functional Programming Approach |
| | 2 | Problem solving using recursion |
| | 3 | Programming Library & its use (eg. graphics library) |
| | 4 | Library creation & usage |
| | | |
| 3 | | |
| | 1 | Memory aware Programming (Pointers) |
| | 2 | Dynamic memory management |
| | 3 | Problems based on dynamic memory |
| | 4 | Debugging Tool: GDB (Demonstration & usage) |
| | | |
| 4 | | |
| | 1 | Searching & Sorting problems |
| | 2 | Measuring Time & Space in programs |
| | 3 | Code organization in multiple files & Makefile |
| | 4 | Code browsing – ctags / cscope |
| | | |

| | | |
|---|---|---|
| 5 | | |
| | 1 | Input/Output mechanisms |
| | 2 | File Handling concepts |
| | 3 | Problems related to files |
| | 4 | Review session |
| | | |

**Week 2:**

| Day | Lecture | Topics |
|---|---|---|
| 1 | | |
| | 1 | Introduction to Process |
| | 2 | Multi-process programs (Demo & Problems) |
| | 3 | Thread API in Linux |
| | 4 | Comparative analysis – Process vs Thread, Problems & Exercises |
| | | |
| 2 | | |
| | 1 | Daemon processes |
| | 2 | Advanced I/O |
| | 3 | Timer creation & usage in Linux |
| | 4 | Problems & Exercises |
| | | |
| 3 | | |
| | 1 | Signals |
| | 2 | Problems & Exercises |
| | 3 | Inter-process Communication |
| | 4 | Problems & Exercises |
| | | |
| 4 | | |
| | 1 | GUI in Linux - GTK+ |
| | 2 | GUI in Linux - QT |
| | 3 | Project overview, Team formation & Project Allocation |
| | 4 | SDLC & Tools for project management |
| | | |
| 5 | | |
| | 1 | Versioning Systems – CVS / SVN |
| | 2 | Bugzilla – Defect Tracking System |
| | 3 | Conclusion, Feedback & Project Review Process |
| | 4 | Review session |
| | | |

**Note:** For any queries, please feel free to contact rishabh.kaushal@gmail.com