Status of Open Source Software in BCA and MCA Courses of IKG PTU, Jalandhar, Implications Thereof and Remedial Measures

Professor Colonel Satish Chander Sood (Veteran)

Abstract

Open-source software (**OSS**) [1] is computer software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the software to anyone and for any purpose.

Use of OSS would affect the economy to a great extent. Its use is also vital for placement of student.

Therefore, it would be prudent to include OSS in our graduation ie BCA and post-graduation ie MCA courses appropriately.

This paper aims at study and analysis of syllabus as laid down by IKG PTU, Jalandhar, for its BCA and MCA courses with specific reference to OSS content.

OSS content has been found to be missing in BCA course and exists to a very limited extent in MCA course.

Colleges/Institutes may take-up the case for suitable revision of the curriculum.

Keywords--- *syllabus; curriculum; BCA; MCA; IKG; PTU; Jalandhar; open source; operating system; computer program; source code; free and open source software; FOSS; OSS; GNU; Linux; use of open source software*

I.   INTRODUCTION TO OPEN SOURCE SOFTWARE

Open Source software is the one which can be studied and modified by a programmer if he so desires and can be distributed freely without any restrictions. Generally, such software can be downloaded free of cost from the developer's websites. Users have freedom to use, copy, study, and change the software in any way. Users may seek paid technical support if they so desire. Companies may also charge for additional cost for added features. However, the source code is available.

Linux Operating System, Android Operating System, Libre Office suit, GNU Image Manipulation Program (GIMP) and so on are some of the examples. Many OSS applications are available for Windows platform also. For example, LibreOffice, Notepad++, GIMP for windows etc.

OSS reduces dependency of the user on a particular company. As a result, software development cost reduces tremendously. Since there is no restriction on sharing OSS, cost of closed source software such as Microsoft Windows, Corel etc reduces.

Since Operating System, Office suit, Graphics software, etc are used in all personal computers, and server software such as Web Page Server, Database Server, Email server, FTP server (software) etc are used in almost all servers in the internet, the cost saving to the nation is tremendous if we use OSS. Organisations can setup their own servers. Individuals can setup their own servers at home and continue to develop web applications. Upgraded versions of Linux Operating System and other OSS applications would be available free of cost.

II.   STUDY OF BCA AND MCA SYLLABUS OF IKG PTU, JALANDHAR

The latest syllabus [2] as on 11 June 2016 was downloaded from the IKG PTU website. Semester wise analysis is given in succeeding paragraphs.

BCA

Scheme & Syllabus of Bachelor of Computer Applications (BCA) Batch 2015

SEMESTER-I	
BSBC101	Communication-I
HVPE101	Human Values and ProfessionalEthics
BSBC102	Programmingin C
BSBC103	Mathematics-I
BSBC104	InformationTechnology
BSBC105	Software Lab-I(Programmingin C)
BSBC106	Software Lab-II(Information Technology)

There is no subject related to Linux/OSS in Semester-I.

SEMESTER-II	
EVSC101	EnvironmentalScience
BSBC201	Communication-II
BSBC202	Mathematics-II
BSBC203	OOPS UsingC++
BSBC204	ComputerSystemArchitecture
BSBC205	Workshop onWeb Development
BSBC206	Software Lab-III(OOPS UsingC++)

There is no subject related to Linux/OSS in Semester-II.

SEMESTER-III	
BSBC301	SystemAnalysis & Design
BSBC302	Data Structures
BSBC303	DigitalCircuits &Logic Design
BSBC304	Basic Accounting
BSBC305	Software Lab-IV (Data Structures)
BSBC306	Hardware Lab-I(DigitalCircuits &Logic Design)

There is no subject related to Linux/OSS in Semester-III.

SEMESTER-IV	
BSBC401	Software Engineering
BSBC402	Microprocessors &Microcontrollers
BSBC403	OperatingSystems
BSBC404	DatabaseManagementSystems
BSBC405	Hardware Lab-II(Microprocessors & Microcontrollers)
BSBC406	Software Lab-V (DatabaseManagement Systems)
	Total

There is no subject related to Linux/OSS in Semester-IV.

SEMESTER-V	
BSBC501	DataWarehousing&Mining
BSBC502	Programmingin Java
BSBC503	ManagementInformation System
BSBC504	Workshop onAdvanced Web Development
BSBC505	Software Lab-VI(Programmingin Java)
BSBC506	ProjectWork-I

There is no subject related to Linux/OSS in Semester-V.

SEMESTER-VI	
BSBC601	PrinciplesofManagement
BSBC602	ComputerGraphics
BSBC603	ComputerNetworks
BSBC604	Information security
BSBC605	Software Lab-VII(ComputerGraphics)
BSBC606	Project Work- 2

There is no subject related to Linux/OSS in Semester-VI.

MCA

Scheme and Syllabus of Masters in Computer Applications (MCA) Batch 2015 July onwards

Semester-I

MCA101	InformationManagement
MCA102	ObjectOriented Programmingin C++
MCA103	ComputerOrganization and AssemblyLanguage
MCA104	Accounting&Financial Management
MCA105	TechnicalCommunication
MCA106	Software Lab-I (Information Management)
MCA107	Software Lab –II(ObjectOriented Programmingin C++)

There is no subject related to Linux/OSS in Semester-I. In addition, due to Lateral Entry provisions, students do not study subjects of Semester 1 and 2 at all.

Semester-II

MCA201	MathematicalFoundationsof ComputerScience
MCA202	RelationalDatabaseManagement System
MCA203	DataStructures
MCA204	Data CommunicationandNetworks
MCA205	LinuxOperatingSystem
MCA206	Software Lab –III(Relational DatabaseManagementSystem)
MCA207	Software Lab –IV(Data Structures)
MCA208	Software Lab –V(Based on-LinuxOperatingSystem)

MCA-205, Linux Operating System is included. However, Due to Lateral Entry provisions, students do not study subjects of Semester 1 and 2 at all. As such, they lack understanding of OSS for other related topics such as MOSIX. Server installation, setup and configuration which are of prime importance are altogether missing.

Semester-III

MCA301	DatabaseAdministration
MCA302	Information security
MCA303	Software Engineering & Project Management
MCA304	Java Programming
MCA305	Elective
MCA306	Software Lab-VI[Database Administration]
MCA307	Software Lab-VII[Java Programming]

There is no subject related to Linux/OSS in Semester-III.

Semester-IV

MCA401	MobileApplicationDevelopment
MCA402	E-Commerce&Web ApplicationDevelopment
MCA403	InteractiveComputerGraphics
MCA404	AdvancedOperatingSystems
MCA405	SoftwareLab-VIII(Web& MobileApplication Development)
MCA406	SoftwareLab-IX(Interactive ComputerGraphics)

There is no subject related to Linux/OSS in Semester-IV.

Semester-V

MCA501	Artificial Intelligence
MCA502	Design and analysis of algorithms
MCA503	WebTechnologies
MCA504	ObjectOrientedAnalysis& DesignwithUML
MCA505	SoftwareLab–XI(Web Technologies)
MCA506	SoftwareLab–XII(Object OrientedAnalysisand DesignwithUML)
MCA507	IndustrialTraining*

There is no subject related to Linux/OSS in Semester-V. Only PHP is included as part of web technologies.

Semester-VI

MCA601	DataWarehousing& Mining
MCA602	CloudComputing
MCA603	AdvancedComputer Architecture
MCA604	SoftwareTesting& QualityManagement
MCA605	SoftwareLab-XIII(SofwareTesting)
MCA606	Project

There is no subject related to Linux/OSS in Semester-VI.

III.   ANALYSIS OF BCA AND MCA SYLLABUS OF IKG PTU

BCA

Analysis.   Absence of Linux/OSS in BCA course is a big anomaly. It could be due to oversight. Absence of Linux/OSS could also have been deliberately planned in connivance with the major players/vendors in the market. It is also likely that someone is getting kickbacks for the same.

Implications.

- Loss to the exchequer.

- Software slavery due to monopoly by commercial vendors.

- Reduced placement avenues for BCA students of IKG PTU.

Recommendation.   Linux/OSS must be included in BCA syllabus appropriately.

MCA

Analysis.   Absence or lack of Linux/OSS content in MCA course is another big anomaly. It has resulted due to lateral entry in MCA course. This anomaly needs to be rectified.

Implications.

- Loss to the exchequer.

- Software slavery.

- Reduced placement avenues for MCA students of PTU.

Recommendation.   Linux/OSS must be included in MCA syllabus appropriately.

ACKNOWLEDGMENT

REFERENCES

[1]Open-source software. (2016, June 11) Retrieved from https://en.wikipedia.org/wiki/Open-source_software

[2]BCA and MCA Syllabus of IKG, PTU (2016, June 11) https://ptu.ac.in/