UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B. Tech CS Mainframe Technology   Semester – V

Subject (Course):   Linux on Mainframe   **Max. Marks**   : 100

Course Code   : CSIB242   **Duration**   : 3 Hrs

No. of page/s: 3

Attempt all questions from **Section A** (each carrying 5 marks); all **Questions** from **Section B** (each carrying 10 marks)**. Attempt both Questions from Section C** (carrying 20 marks)**. Assume any missing data. Draw diagram wherever applicable. Provide appropriate examples.**

Section A (attempt all questions – 20 Marks)

Q1.	Why Linux used on Mainframes when it is already having System Z?	**[5]**
Q2.	Illustrate the Marist installation of Linux.	**[5]**
Q3.	What is the benefit of adding **LINUX01 to AUTOLOG1's PROFILE EXEC**?	**[5]**
Q4.	What is X Windows System? How it is helpful?	**[5]**

SECTION B (Attempt all Questions – 40 Marks)

Q5.   Explain the block diagram shown below and describe Logical Volume Manager (LVM)?

[10]
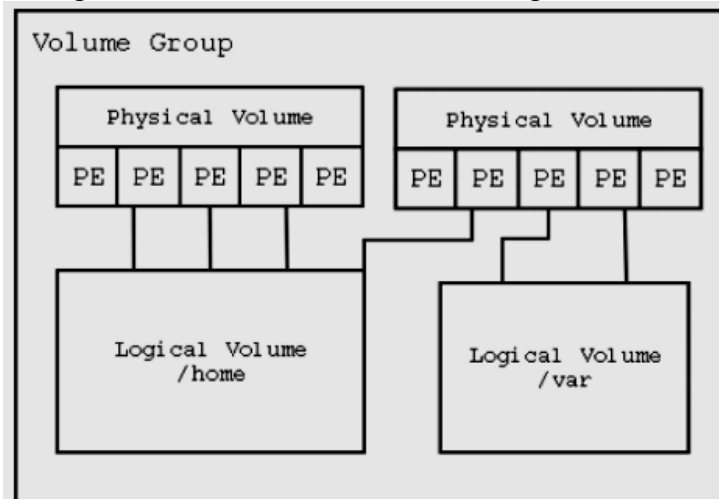
Q6.	How do you recompile an application using Linux command? What are the three main commands – discuss?	**[10]**

Q7.	Explain the following:
	   i. YaST
	   ii. VNC
	   iii. vgdisplay
	   iv. vgextend
		[10]

Q8.	Analyze and discuss the strength of Linux on Mainframe over other distributed systems?	**[10]**

SECTION C (Attempt both **Questions – 40 Marks**)

> *"By choosing to run Linux alongside z/OS, we rely on a platform we know, and we benefit from easy access to skilled resources and third-party software, backed by the traditional qualities of the mainframe in areas such as reliability, scalability and security."*
> **—Shivanand Bhavikatti, Divisional Head, IT Services, Networking & IBM Mainframe Project, KEONICS**

KEONICS

Getting the best of both worlds with Linux on IBM z Systems.

To support a new ERP system and maximize the value of existing investments, KEONICS introduced Linux alongside IBM® z/OS® on its IBM z Systems® server. The organization has since added a digital learning platform to this Linux environment, which offers accelerated deployment and an estimated 50 percent cost saving versus alternative platforms.

Transformation story

Open to new requirements

Today, the z Systems server at KEONICS has one general-purpose processor (CP) and six IBM Integrated Facility for Linux (IFL) processors running a total of eight logical partitions (LPARs). Seven of these LPARs are used for z/OS training systems and sandboxes, supporting around 460 users; the final LPAR runs KVM and hosts multiple guest instances of SUSE Linux Enterprise Server for z Systems. This Linux environment runs the KEONICS ERP system, developed in-house to offer functions such as purchasing, inventory management, HR, contract management and tenant management. The ERP system is based entirely on open source technologies, including MySQL database, Apache Tomcat web server for the application front-end in HTML5 and AJAX, Spring Beans within the Spring Framework for the business logic, NetBeans IDE for the development environment, and Pentaho for reporting.

Bhavikatti comments: "We were keen to invest in open source technologies because they give us access to a wider pool of talent and support. IBM mentored us in KVM to ensure that we developed the right internal skills, and this was very helpful in the initial deployment stages. The performance of our ERP system on Linux on z Systems is great, and the stability is exceptional: the virtual machines just keep running without any problems."

The Linux environment on the z Systems server at KEONICS also runs a Public Distribution System for the state of Karnataka and a Learning Management System that is used by multiple local government departments to deliver tailored education programs in their own training centers.

"By choosing to run Linux alongside z/OS, we rely on a platform we know, and we benefit from easy access to skilled resources and third-party software, backed by the traditional qualities of the mainframe in areas such as reliability, scalability and security," says Bhavikatti. "Linux on z Systems enables us to be highly responsive

to new requirements but also to offer stable solution delivery, which is obligatory when you are dealing with government organizations."

In reference to the above context, answer the following questions appropriately. Each carries 20 marks

Q9. Why do you think KEONICS opted to run Linux alongside z/OS? Explain the features of FTP server and NFS server. How the usability/reliability of these servers is beneficial for KEONICS?

Q10. What is LDAP? Explain the working of LDAP. Do you think that cloning the virtual servers is important for running *"Public Distribution System/Learning Management System"* for the state of Karnataka

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Section A (attempt all questions – 20 Marks)

Q1.	Mainframe has already most robust OS i.e. system Z then why IBM came up with Linux on its Mainframe machines?	**[5]**
Q2.	Why do you need to update a kernel? What are the two different process to update it?	**[5]**
Q3.	What are binary drivers why they are required?	**[5]**
Q4.	What is X Windows System? How it is helpful?	**[5]**

SECTION B (Attempt all **Questions – 40 Marks**)

Q5.	Explain the block diagram shown below and summarize the SUSE Installation?	**[10]**
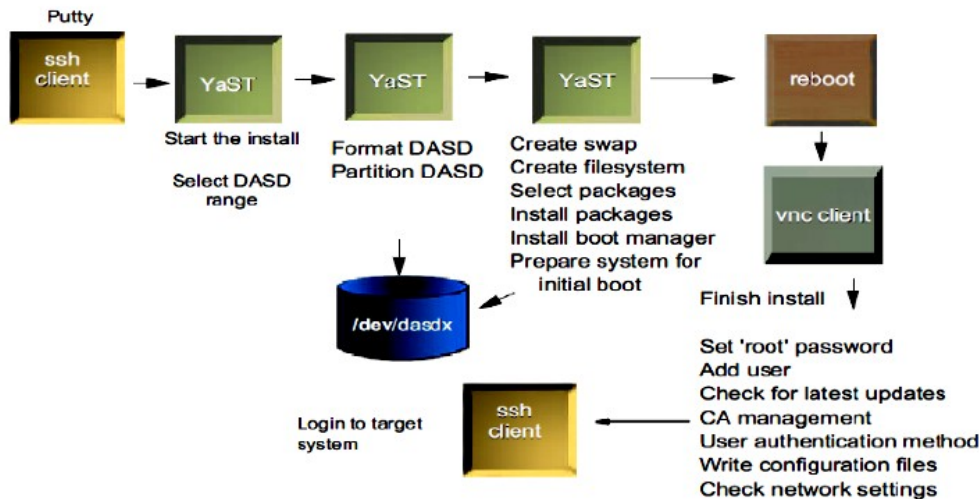
Q6.	Discuss some of the add-on products provided along with Software Development Kit of SUSE 11.	**[10]**

Q7.	Explain the following:
	    i. Command for testing LVM
	    ii. Command to start LDAP Server
	    iii. dasdfmt
	    iv. Command to stop LDAP Server
		[10]

Q8.	Analyze and discuss the strength of Linux on Mainframe over other distributed systems ?	**[10]**

SECTION C (Attempt both **Questions – 40 Marks)**

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In reference to the above context, answer the following questions appropriately. Each carries 20 marks

Q9. How Linux alongside z/OS is saving 50% cost as compared to the other platforms for KEONICS? What is LDAP? Explain the working of LDAP. How LDAP is beneficial for the organizations like KEONICS?

Q10. Explain the features of FTP server and NFS server. How cloning the virtual servers can be beneficial for continuous availability of *"PDS /LMS"* for the state of Karnataka

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