B.L.D.E. Association's

S.B.ARTS & K.C.P SCIENCE COLLEGE VIJAYAPUR

M.Sc. Computer Science

A REPORT ON

Bridge Course

For
M.Sc (CS)-I Sem Students

2017-2018

Resource Person

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S.B.ARTS & K.C.P SCIENCE COLLEGE
VIJAYAPUR

M.Sc(CS) Programme

NOTICE

It is here by informed to all the M.Sc(CS) I Semester students that there will be Bridge Course from 07-08-2017 to 14-08-2017 .So all of you should attend and get the benefit.

Co-o.
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About Bridge Course

The Bridge Course is aimed to act as a buffer for the new entrants, with an objective to provide adequate time for the transition to hard-core engineering courses. During this interaction of bridge course week with the faculty and their classmates, the students will be equipped with the knowledge and the confidence needed to take on bigger challenges as future engineers of this country.

Objectives: To act as a buffer for the new entrants.

- To provide adequate time for the transition to hard-core engineering courses.

- Focus on fostering a strong sense of ethical judgment and moral fortitude.

- Applications based self-learning and intermingling of a large cross section of students from vastly varying backgrounds.

- A breather, to prepare themselves before courses for first year engineering commence.

- The students will be equipped with the knowledge and the confidence needed to take on bigger challenges.

- Nurture a deeper understanding of the local and global world and our place in at as concerned citizens of the world.

- Interactive and Active Learning by Doing have been weaved into the Bridge Course.

- Active learning with the help of other students.

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Syllabus
Functions of Operating System

Prerequisite – Introduction of Operating System

An **Operating System** acts as a communication bridge (interface) between the user and computer hardware. The purpose of an operating system is to provide a platform on which a user can execute programs in a convenient and efficient manner.

An operating system is a piece of software that manages the allocation of computer hardware. The coordination of the hardware must be appropriate to ensure the correct working of the computer system and to prevent user programs from interfering with the proper working of the system. Example: Just like a boss gives order to his employee, in the similar way we request or pass our orders to the Operating System. The main goal of the Operating System is to thus make the computer environment more convenient to use and the secondary goal is to use the resources in the most efficient manner.

What is Operating System?

An operating system is a program on which application programs are executed and acts as an communication bridge (interface) between the user and the computer hardware.

Important functions of an operating System:

1. **Security –**
   The operating system uses password protection to protect user data and similar other techniques. it also prevents unauthorized access to programs and user data.
2. **Control over system performance –**
   Monitors overall system health to help improve performance. records the response time between service requests and system response to have a complete view of the system health. This can help improve performance by providing important information needed to troubleshoot problems.
3. **Job accounting –**
   Operating system Keeps track of time and resources used by various tasks and users, this information can be used to track resource usage for a particular user or group of user.
4. **Error detecting aids –**
   Operating system constantly monitors the system to detect errors and avoid the malfunctioning of computer system.
5. **Coordination between other software and users –**
   Operating systems also coordinate and assign interpreters, compilers, assemblers and other software to the various users of the computer systems.
6. **Memory Management –**
   The operating system manages the Primary Memory or Main Memory. Main memory is made up of a large array of bytes or words where each byte or word is assigned a certain address. Main memory is a fast storage and it can be accessed directly by the CPU. For a

program to be executed, it should be first loaded in the main memory. An Operating System performs the following activities for memory management:

7. It keeps tracks of primary memory, i.e., which bytes of memory are used by which user program. The memory addresses that have already been allocated and the memory addresses of the memory that has not yet been used. In multi programming, the OS decides the order in which process are granted access to memory, and for how long. It Allocates the memory to a process when the process requests it and deallocates the memory when the process has terminated or is performing an I/O operation.

8. **Processor Management –**
   In a multi programming environment, the OS decides the order in which processes have access to the processor, and how much processing time each process has. This function of OS is called process scheduling. An Operating System performs the following activities for processor management.

9. Keeps tracks of the status of processes. The program which performs this task is known as traffic controller. Allocates the CPU that is processor to a process. De-allocates processor when a process is no more required.

10. **Device Management –**
    An OS manages device communication via their respective drivers. It performs the following activities for device management. Keeps tracks of all devices connected to system. designates a program responsible for every device known as the Input/Output controller. Decides which process gets access to a certain device and for how long. Allocates devices in an effective and efficient way. Deallocates devices when they are no longer required.

11. **File Management –**
    A file system is organized into directories for efficient or easy navigation and usage. These directories may contain other directories and other files. An Operating System carries out the following file management activities. It keeps track of where information is stored, user access settings and status of every file and more… These facilities are collectively known as the file system.
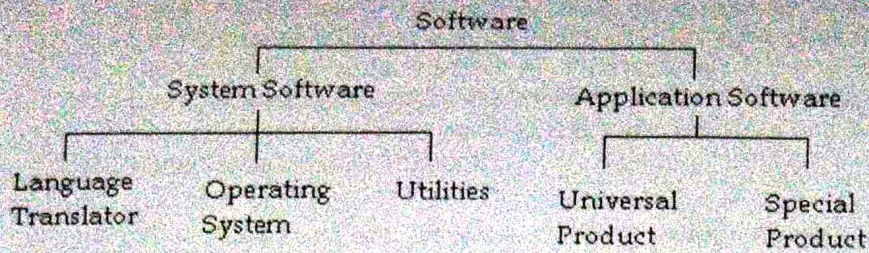
SOFTWARE ENGINEERING

A computer consist of two parts Hardware & Software. In previous unit we know about hardware peripherals quite in details. This unit will know us about software concept in term of computer. Without software our computer behaves like a car without petrol. Software is used to control the hardware devices, we see in previous unit.

A software is set of programs, which are the set of instructions. These instructions are written in a special computer language that computer can understand. These languages are known as Programming Languages.

A computer can neither think nor make any decision its own. Also it is impossible for any computer to independently analyse a given data and follow its own method of solution. It need a program to tell it what to do with data.

Computer software is classified in two parts-

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                          Software
              ┌─────────────┴─────────────┐
        System Software            Application Software
     ┌────────┼────────┐          ┌────────┴────────┐
 Language   Operating  Utilities  Universal      Special
 Translator  System               Product        Product
```

System software:- A system software consist of many programs for controlling many Input/Output operation. A operating system is example of system software. A system software is further classified in three parts

- **Language Translator:-** A program that convert programming source code to machine readable codes are known as language translator. There are three types of language translator
    1. Interpreter:- This is a program that convert high level language to machine level language i.e. Machine level language. The basic property of Interpreter is that it first scan one line of a program or source code, if this is error free then it executes either it will stop the execution. So a interpreter will check a program line by line and execute it, if it is error free. This process takes more time in execution of any program.

    2. Compiler:- A compiler is a program used to covert high-level language into machine level. The basic property of compiler is that it first scan all file at a time and check for any error, if no error found then change the program to machine level either show all the errors present in the program. So it takes very less time for execution.

    3. Assembler:- An assembler is a program written to convert assembly level language to machine level language.

- **Operating system:-**An operating system is the system software which is used to operate the computer. An operating system manages a computer resources very efficiently, takes care of scheduling of multiple jobs for execution and manages the flow of data, instructions between input/output unit and the main memory. Windows, Unix, Linux, Macintosh etc. are few widely used operating systems. An operating system are classified in different categories with their performance.

    1. *Single user operating system*:- A single user operating system give the permission to run or execute one application or program at a time. That is one user can work at a time. e.g.- MS-DOS.

    2. *Multi-user Operating system*:- A multi-user operating system give the permission to many users work at same time. A transaction process system such as railway reservation system need of hundred of terminals under a single program is example of multi-user operating system. e.g. Unix, Linux etc.

3. *Network operating system:*- A network operating system is a collection of software's which allow a set of computers which are interconnected by a computer network to be used together in a convenient and cost effective manner. In a network operating system the users are aware of existence of multiple computers and can log into remote machine and copy files from one location to another. Like Unix, Windows-NT, Linux etc.

4. *The Graphical User Interface (GUI) operating system:*- A GUI uses graphical components like small images, pictures to represent a program, so that instead of typing it we just select it using pointing devices like Mouse etc. Ex. Windows 3.1, Windows-95/98/2000/ME/XP, Linux etc.

- **Utilities:**- Utility program are the programs which are often used by application program. These utility programs are created by the manufacturer. Ex. Text Editors, Sorting, Formatting etc.

Application Software:- Application software are written to enable the computer to solve a specific data processing task. It is used for solving our various works. A program written for specific purpose could be termed as Application software. Example- Word processor, Database management system's software, accounting software's etc. Application softwares can be classified in different classes like

OPERATION TECHNIQUES

Operations research (OR) is an analytical method of problem-solving and decision-making that is useful in the management of organizations. In operations research, problems are broken down into basic components and then solved in defined steps by mathematical analysis.

The process of operations research can be broadly broken down into the following steps:

1. Identifying a problem that needs to be solved.
2. Constructing a model around the problem that resembles the real world and variables.
3. Using the model to derive solutions to the problem.
4. Testing each solution on the model and analyzing its success.
5. Implementing the solution to the actual problem.

Disciplines that are similar to, or overlap with, operations research include statistical analysis, management science, game theory, optimization theory, artificial intelligence and network analysis. All of these techniques have the goal of solving complex problems and improving quantitative decisions.

The concept of operations research arose during World War II by military planners. After the war, the techniques used in their operations research were applied to addressing problems in business, the government and society.

Characteristics of operations research

There are three primary characteristics of all operations research efforts:

1. Optimization- The purpose of operations research is to achieve the best performance under the given circumstances. Optimization also involves comparing and narrowing down potential options.
2. Simulation- This involves building models or replications in order to try out and test solutions before applying them.
3. Probability and statistics- This includes using mathematical algorithms and data to uncover helpful insights and risks, make reliable predictions and test possible solutions.

Importance of operations research

The field of operations research provides a more powerful approach to decision making than ordinary software and data analytics tools. Employing operations research professionals can help companies achieve more complete datasets, consider all available options, predict all possible outcomes and estimate risk. Additionally, operations research can be tailored to specific business processes or use cases to determine which techniques are most appropriate to solve the problem.

Uses of operations research

Operations research can be applied to a variety of use cases, including:

- Scheduling and time management.
- Urban and agricultural planning.
- Enterprise resource planning (ERP) and supply chain management (SCM).
- Inventory management.
- Network optimization and engineering.
- Packet routing optimization.
- Risk management.

Bridge Course

S.No	Name of Students	7/8/2017	8/8/2017	9/8/2017	10/8/2017	11/8/2017	12/8/2017	14/8/2017
1	AKSHATA KALAGI	*signed*	*signed*	*signed*	*signed*	*signed*		*signed*
2	AKSHATA KOLKAR	*signed*	*signed*	*signed*		*signed*	*signed*	*signed*
3	AKSHAY PATIL	*signed*	*signed*	*signed*	*signed*	*signed*		*signed*
4	AMBIKAJADHAV	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*
5	NANDA MELINAMANI	*signed*	*signed*	*signed*	*signed*		*signed*	*signed*
6	POOJA BIRADAR	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*
7	SARITA BIRADAR	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*	—
8	SAYEDASIF JAHAGIRDAR	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*	
9	SHIVALEELA TOGUNASHI	*signed*	*signed*		*signed*	*signed*	*signed*	*signed*
10	SOUMYA HIREMATH	*signed*	*signed*	*signed*		*signed*	*signed*	*signed*
11	SUJATA HALLI	*signed*	*signed*	*signed*	*signed*	*signed*	*signed*	—

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