V.M.G.RAJASEKARAN – RAMANI SRI SARADA SAKTHI MAT. HR. SEC. SCHOOL

STD: XI   **COMPUTER SCIENCE**

VIRUDHUNAGAR DISTRICT

COMMON QUARTERLY EXAMINATION – SEPTERMBER 2024

STD: XI - A   **COMPUTER SCIENCE**

PART – I

I. ANSWER ALL THE QUESTIONS: 15 X 1 = 15

1. b. RAM
2. d. 1024
3. c. d
4. d. Universal Gate
5. c. Cache memory
6. d. All the above
7. a. Window 7
8. c. Walk in the park
9. a. u, v=5,5
10. b. m=7, n=-8
11. c. C with classes
12. a. signed
13. d. \n
14. b. 10
15. d. 72

PART – II

II. Answer ANY 6 of the following and question no. 23 is compulsory;

16. What is a computer?

➢ A computer is an electronic device that manipulates information, or data.

➢ It has the ability to store, retrieve, and process data.

➢ Computer works faster than human being and given the values more accuracy and reliable.

17. List the encoding systems for characters in memory.

1. BCD – Binary Coded Decimal
2. EBCDIC – Extended Binary Coded Decimal Interchange Code
3. ASCII – American Standard Code for Information Interchange
4. Unicode
5. ISCII - Indian Standard Code for Information Interchange

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18. **Draw the truth table for XOR gate.**

Input		Output
A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

19. **What is multi-processing?**
Multi-processing:
➢ This is a one of the features of Operating System. It has two or more processors for a single running process.
➢ Processing takes place in parallel is known as parallel processing.

20. How will you Rename a File?
Using the FILE Menu
1. Select the File or Folder you wish to Rename.
2. Click **File→ Rename**.
3. Type in the new name.
4. To finalise the renaming operation .

21. What is the difference between an algorithm and a program?

ALGORITHM	PROGRAM
An algorithm is a self-contained step by-step set of operations to be performed to solve specific problems.	A Computer program is a sequence of instructions that complete the rules of a specific programming language, written to perform a specified task with a computer.
Method / Procedure of a program	Computer Coding / Program

22. **What is an invariant?**
➢ An expression involving variables, which remains unchanged by an assignment to one of these variables, is called an invariant of the assignment.
➢ An expression of the variables has the same value before and after an assignment, it is an invariant of the assignment.

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23. **What is meant by a token? Name the token available in C++.**
   ➢ The smallest individual unit in a program is known as a "**Token**" or "**Lexical unit.**"
C++ has the following tokens:
Keywords, Identifiers, Constants, Operators, Punctuators.

24. What is the use of setw[ ] format manipulator?

What is the use of setw( ) format manipulator?
   ➢ Setw() format manipulator is used to set the width of the given field into the output.
   ➢ The field width determines the minimum number of characters to be written in output.

PART – III

II. Answer ANY 6 of the following and question no. 23 is compulsory;

25. What is input device?
   ➢ Give two examples. Input device is used to feed any form of data to the computer, which can be stored in the memory unit for further processing.
   ➢ Example: Keyboard, mouse , Scanner, Fingerprint scanner, Track Ball, Retinal Scanner, Light pen etc.

26. What is radix of a number system? Give example
   ➢ A numbering system is a way of representing numbers. Each number system is uniquely identified by its **base value** or **radix**.
   ➢ Radix or base is the count of number of digits in each number system.

27. Convert the decimal number (88) to binary, then convert that convert that binary number to octal.

$(88) = (1011000)_2 = (130)_8$

28. Differentiate Computer Organization from Computer Architecture.

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Computer Organization	Computer Architecture
Computer organization deals with the hardware components of a computer system.	Computer architecture deals with the engineering considerations involved in designing a computer.

29. List the key features of Operating system

- ➢ User Interface
- ➢ File Management
- ➢ Memory Management
- ➢ Process Management
- ➢ Fault tolerance
- ➢ Security Management

30. Write a note on the elements of a window.

Elements of a window:
- ➢ **Title Bar**
- ➢ **Menu Bar**
- ➢ **Workspace**
- ➢ **Scroll bars**
- ➢ **Corners and Borders**

Title Bar :
   ➢ The title bar will display the name of the application and the name of the document opened.
   ➢ It will also contain minimize, maximize and close button.

Menu Bar:
   ➢ Menu bar is seen under the title bar.
   ➢ Menus in the menu bar can be accessed by pressing Alt key and the letter that appears underlined in the menu title.

Workspace:
   ➢ The workspace is the area in the document window to enter or type the text of your document.
   ➢ It is the point of insertion for typing within the document.

31. How is state represented in algorithms?

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- State is a basic and important abstraction.
- Computational processes have state. A computational process starts with an initial state. As actions are performed, its state changes. It ends with a final state.
- State of a process is abstracted by a set of variables in the algorithm.
- The state at any point of execution is simply the values of the variables at that point.

32. **What is the use of a header file?**
- If you fail to include iostream in your program, an error message will occur on cin and cout; and we will not be able to get any input or send any output.
- iostream header file contains the definition of its member objects cin and cout.

33. Write the syntax and purpose of switch statement.
syntax of switch purpose of switch statement

```
switch(expression)
{
case constant 1:
statement(s);
break;
case constant 2:
statement(s);
break;
.
.
default:
statement(s);
}
```

* The switch statement is a multi-way branch statement.

*A switch statement can only work for quality of comparisons.

*No two case labels in the same switch can have identical values.

PART – D

34. Explain the basic components of a computer with a neat diagram.
- The computer is the combination of hardware and software.
- Hardware is the physical component of a computer like motherboard, memory devices, monitor, keyboard etc.,
- while software is the set of programs or instructions.
- Both hardware and software together make the computer system to function.

Input Unit:

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- Input unit is used to feed any form of data to the computer, which can be stored in the memory unit for further processing.
- Example: Keyboard, mouse,

Central Processing Unit:

- CPU is the major component which interprets and executes software instructions.
- It also controls the operation of all other components such as memory, input and output units.
- It accepts binary data as input process the data according to the instructions and provides the result as output.
- The CPU has three components which are Control unit, Arithmetic and logic unit (ALU) and Memory unit.

Arithmetic and Logic Unit:

- The ALU is a part of the CPU where various computing functions are performed on data.
- The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations.
- The result of an operation is stored in internal memory of CPU.
- The logical operations of ALU promote the decision-making ability of a computer.

Control Unit:

- The control unit controls the flow of data between the CPU, memory and I/O devices.
- It also controls the entire operation of a computer.

Memory Unit :

- The Memory Unit is of two types which are primary memory and secondary memory.
- The primary memory is used to temporarily store the programs and data when the instructions are ready to execute.
- The secondary memory is used to store the data permanently.

Output Unit:

- An Output Unit is any hardware component that conveys information to users in an understandable form.
- Example: Monitor, Printer etc.

OR

a) Add: $11110111 + 100011 = (100011010)_2$

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b) Subtract: 100000+10101 = (1011)$_2$

35. Explain the fundamental gates with expression and truth table.

➢ A gate is a basic electronic circuit which operates on one or more signals to produce an outputsignal.

➢ There are three fundamental gates namely AND, OR and NOT.

i. AND Gate:

The AND gate can have two or more input signals and produce an output signal.

In boolean algebra the multiplication sign stands for the AND operation.

C = A . B

ii. OR Gate:

The OR gate gets its name from its behavior like the logical inclusive "OR".

We use the + sign to denote the OR function.

C = A + B

iii. NOT Gate:

The NOT gate, called a logical inverter, has only one input. It reverses the logical state. In other words the output C is always the complement of the input.

In boolean algerbra, the overbar stands for NOT operation.

C = NOT A

OR

Explain the types of ROM.

➢ Read only memory refers to special memory in a computer with prerecorded data at manufacturing time which cannot be modified.

➢ The stored programs that start the computer and perform diagnostics are available in ROMs.

➢ ROM stores critical programs such as the program that boots the computer.

➢ Once the data has been written onto a ROM chip, it cannot be modified or removed and canonly be read.

➢ ROM retains its contents even when the computer is turned off.

➢ ROM is called as a non-volatile memory.

PROM:

➢ Programmable read only memory is also a non-volatile memory on which

➢ data can be written only once.PROM is non-volatile

➢ PROM is manufactured as a blank memory, whereas a ROM is programmed during the manufacturing process itself.

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➢ PROM programmer or a PROM burner is used to write data to a PROM chip.

➢ The process of programming a PROM is called burning the PROM.

EPROM:

➢ Erasable Programmable Read Only Memory is a special type of memory which serves as a PROM.

➢ The content can be erased using ultraviolet rays.

➢ An EPROM differs from a PROM, PROM can be written only once and cannot be erased.

➢ EPROMs are used widely in personal computers because they enable the manufacturer to change the contents of the PROM to replace with updated versions or erase the contents before the computer is delivered.

EEPROM:

➢ Electrically Erasable Programmable Read Only Memory can be erased by exposing it to an electrical charge.

➢ EEPROM is non-volatile.

➢ EEPROM is slower in performance.

36. Explain Process management technique in Operating system

Process management is function that includes creating and deleting processes providing mechanisms for processes to communicate and synchronize with each other.

The following algorithms are mainly used to allocate the job to the processor.

1. FIFO 2. SJF 3. Round Robin 4. Based on Priority

1. FIFO (First In First Out)Scheduling:

➢ This algorithm is based on queuing technique.

➢ The process that enters the queue first is executed first by the CPU, followed by the next and so on.

➢ The processes are executed in the order of the queue (row).

2. SJF (Shortest Job First)Scheduling:

This algorithm works based on the size of the job being executed by the CPU. Consider two jobs A and B.

1) A = 6 kilo bytes 2) B = 9 kilo bytes. First the job "A" will be assigned and then job

"B" gets its turn.

3. Round Robin Scheduling

➢ The Round Robin (RR) scheduling algorithm is designed for time sharing systems.

➢ Jobs (processes) are assigned and processor time in a circular **method**.

Example take three jobs A, B, C.

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➢ First the job A is assigned to CPU then job B and job C and then again A, B and C

4. Based On Priority
  ➢ The given job (process) is assigned based on a Priority.
  ➢ The job which has higher priority is processed first Take two jobs A and B.
  ➢ Let the priority of A be 5 and priority B be 7.
  ➢ Job B is assigned to the processor before job A.

OR

Explain the version of Windows Operating System.

Versions	Logo	Year	Specific features
Windows 1.x	MICROSOFT WINDOWS	1985	• Introduction of GUI in 16 - bit. processor • Mouse was introduced as an input device.
Windows 2.x	MICROSOFT WINDOWS	1987	• Supports to minimize or maximize windows. • Control panel feature was introduced with various system settings and customising options.
Windows 3.x	MICROSOFT WINDOWS	1992	• Introduced the concept of multitasking. • Supported 256 colours which brought a more modern, colourful look to the interface.
Windows 95	MICROSOFT WINDOWS	1995	• Introduced Start button, the taskbar, Windows Explorer and Start menu. • Introduced 32 - bit processor and focused more on multitasking.

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Windows 98	MICROSOFT WINDOWS	1998	• Integration of the Web browser (Internet Explorer) with the Operating System. • DOS gaming began to disappear as Windows based games improved. • Plug and play feature was introduced.
Windows NT	MICROSOFT WINDOWS		• Designed to act as servers in network.
Windows Me	Windows Me	2000	• It introduced automated system diagnostics and recovery tools.
Windows 2000	Windows 2000 Professional	2000	• Served as an Operating System for business desktop and laptop systems. • Four versions of Windows 2000 were released: Professional (for business desktop and laptop systems), Server (both a Web server and an office server), Advanced Server (for line-of-business applications) and Data Centre Server (for high-traffic computer networks).
Windows XP	Windows xp	2001	• Introduced 64-bit Processor. • Improved Windows appearance with themes and offered a stable version.
Windows Vista	Windows Vista	2006	• Updated the look and feel of Windows.
Windows 7	Windows 7	2009	• Booting time was improved, introduced new user interfaces like Aero Peek, pinning programs to taskbar, handwriting recognition etc. and Internet Explorer 8.
Windows 8	Windows 8	2012	• Windows 8 is faster than previous versions of Windows. • Start button was removed. • Windows 8 takes better advantage of multi-core processing, solid state drives (SSD), touch screens and other alternate input methods. • Served as common platform for mobile and computer.
Windows 10	Windows 10	2015	• Start Button was added again. • Multiple desktop. • Central Notification Center for App notification and quick actions. • Cortana voice activated personal assistant.

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37. **Write the specification of an algorithm hypotenuse whose inputs are the lengths of the two shorter sides of a right angled triangle, and the output is the length of the third side.**

Answer:

Hypotenuse (S1, S2)

--Inputs: S1 and **S2** are Real numbers or Integers.

--Outputs: L is a Real number such that **L2= S12 + S22**

Explanation:

S1, S2 – Input Length of the Real number variables

L – **Length of the Third side.**

OR

Write about Binary operators used in C++.

Binary Operators - Require two operands C++

Operators are classified as:

(1) Arithmetic Operators

(2) Relational Operators

(3) Logical Operators

(4) Bitwise Operators

(5) Assignment Operators

(6) Conditional Operator

(1) Arithmetic Operators

Arithmetic operators to perform simple arithmetic operations like addition, subtraction, multiplication, division etc.,

Operator	Operation	Example
+	Addition	10 + 5 = 15
-	Subtraction	10 – 5 = 5
*	Multiplication	10 * 5 = 50
/	Division	10 / 5 = 2 (Quotient of the division)
%	Modulus (To find the reminder of a division)	10 % 3 = 1(Remainder of the division)

(2) Relational Operators

Relational operators are used to determine the relationship between its operands. When the relational operators are applied on two operands, the result will be a Boolean value i.e **1** or **0** to represents **True** or **False** respectively. C++ provides six relational operators. They are,

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Operator	Operation	Example
>	Greater than	a > b
<	Less than	a < b
>=	Greater than or equal to	a >= b
<=	Less than or equal to	a <= b
==	Equal to	a == b
!=	Not equal	a != b

(3)Logical Operators

A logical operator is used to evaluate logical and relational expressions. The logical operators act upon the operands that are themselves called as logical expressions.

C++ provides three logical operators.

Operator	Operation	Description
&&	AND	The logical AND combines two different relational expressions in to one. It returns 1 (True), if both expression are true, otherwise it returns 0 (false).
||	OR	The logical OR combines two different relational expressions in to one. It returns 1 (True), if either one of the expression is true. It returns 0 (false), if both the expressions are false.
!	NOT	NOT works on a single expression / operand. It simply negates or inverts the truth value. i.e., if an operand / expression is 1 (true) then this operator returns 0 (false) and vice versa

Example: a = 5, b = 6, c = 7;

Expression	Result
(a<b) && (b<c)	1 (True)
(a>b) && (b<c)	0 (False)
(a<b) || (b>c)	1 (True)
!(a>b)	1 (True)

(4)Bitwise Operators

Bitwise operators work on each bit of data and perform bit-by-bit operation.

In C++, there are three kinds of bitwise operators, which are:

(i) Logical bitwise operators

(ii) Bitwise shift operators

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(iii)One's complement operators **(5)Assignment Operator:**

Assignment operator is used to assign a value to a variable which is on the left hand side of an assignment statement.

= (equal) is commonly used as the assignment operator in all computer programming languages.

This operator copies the value at the right side of the operator to the left side variable. It is also a binary operator.

Operator	Name of Operator
+=	Addition Assignment
-=	Subtraction Assignment
*=	Multiplication Assignment
/=	Division Assignment
%=	Modulus Assignment

(6) Conditional Operator:

- ☞ In C++, there is only one conditional operator is used. **?:** is a conditional Operator.
- ☞ This is a Ternary Operator.
- ☞ This operator is used as an alternate to if … else control statement.

The syntax of the conditional operator is:

expression 1? expression 2 : expression 3
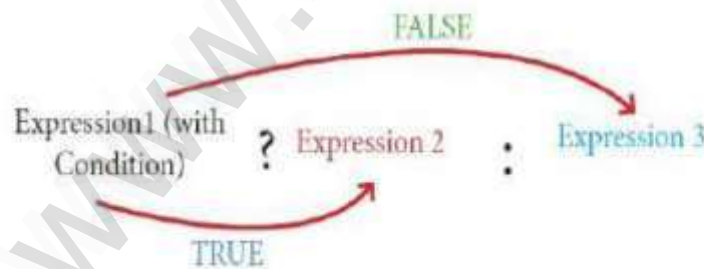
38. Explain control statement with suitable example.

➢ Control statements are statements that alter the sequence of flow of instructions.

➢ In a program, statements may be executed sequentially, selectively or iteratively.

➢ If the Statements are executed sequentially, the flow is called as sequential flow.

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➢ If the statements alter the flow of execution like branching, iteration, jumping and function calls, this flow is called as control flow.

➢ The **sequential statement** are the statements, that are executed one after another only once from top to bottom.

➢ These statements do not alter the flow of execution. These statements are called as sequential flow statements. They are always end with a semicolon (;).

➢ **The selection statement** means the statement (s) are executed depends upon a condition. If a condition is true, a true block (a set of statements) is executed otherwise a false block is executed. This statement is also called **decision statement** or **selection statement.**

➢ **Iteration Statement (looping)** is use to execute a set of statements repeatedly until a condition is satisfied.

➢ If a condition evaluates to true, the set of statements (true block) is executed again and again.

➢ This is also known as **looping statement** or iteration statement.

OR

Write a program to find the LCM and GDC of two numbers.
To find the LCM of two numbers

```
#include <iostream>
using namespace std;
int main()
{
int n1, n2, max;
cout << "Enter two numbers: ";
cin >> n1 >> n2;
max = (n1 > n2) ? n1 : n2;
do
{
if (max % n1 == 0 && max % n2 == 0)
{
cout << "LCM = " << max;
break;
}
else
++max;
} while (true);
return 0;
}
```

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Output:
Enter two numbers: 12
18
LCM = 36
To find the GDC of two numbers
```
#include <iostream>
using namespace std;
int main()
{
int n1, n2;
cout << "Enter two numbers: ";
cin >> n1 >> n2;
while(n1 != n2)
{
if(n1 > n2)
n1 -= n2;
else
n2 -= n1;
}
cout << "GDC = " << n1;
return 0;
}
```
Output:
Enter two numbers: 78
52
    GDC = 26

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Mrs. GEETHAMARIMUTHU, M.Sc.,B.Ed.
P.G. Computer Science
VMG RR SRI SARADA SAKTHI MHSS
VIRUDHUNAGAR