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Subject:

INTRO TO COMPUTER PROGRAMMING

Instructor:

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# Question No 1:

## PART (A):

Pseudo Code:

→ Input the width ( $W$ ) and length ( $L$ ) of a rectangle.

→ Calculate the area ( $A$ ) by multiplying  $L$  with  $W$ .

→ Print  $A$

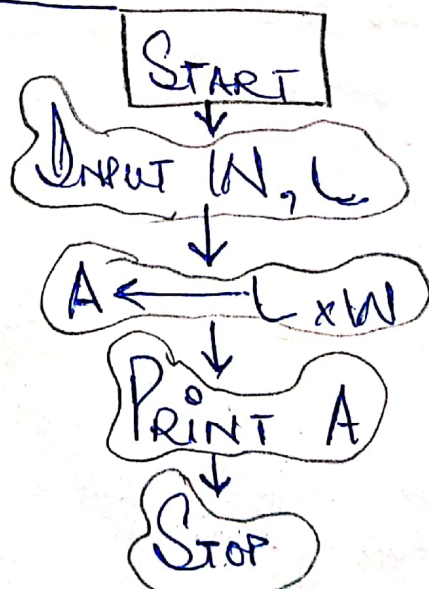
→ ALGORITHM:

→ Step 1 = Input  $W, L$ .

→ Step 2 =  $A \leftarrow L \times W$ .

→ Print  $A$

→ FLOWCHARTS:



## PART (B)

### THE TYPES OF ERROR

There are three general types of error:

#### → SYNTAX ERRORS

→ Syntax errors are 'grammatical' errors or detected when you compile the program.

→ Syntax errors prevent your program from executing.

#### → RUNTIME ERRORS

→ Runtime error occurs when you tell the computer to do something illegal.

→ Runtime error may halt execution of your program.

#### → LOGIC ERRORS

→ Logic errors are not detected by computer.

→ Logic errors cause your result to be wrong.

## Question No 2:

Ans → We use the `iostream.h` and `conio.h` used in C++ because:

→ `iostream.h` is standard C++ input and output, contains object like `cout`, `cin` and `cerr`. Works with C++ streams, which are objects that manage I/O. `conio.h` stands for "Console Input/output a windows only header which provide C junction for console IO manipulations like `getch`, `ungetch` etc

→ `conio.h` is a header file used mostly by MS-DOS compilers to provide console input/output it is not part of the C standard library or `...-150C`, nor it is define by POSIX this header declares several usefull library function for performing console input and output from program.

## PART (B) :

↳ Maintain and update the program are the modification of a software product after delivery to correct faults, to improve performance or other attributes or to adopt the product to a modified environment. It deals with updating the software according to change in user requirements.

→ Therefore it is important to write a program that is easy to read, understand and maintain.

→ There are two types of maintenance.

(A) Perfective Maintenance.

(B) Preventive Maintenance.

# Question No 3:

## 1) Bugs & Debug:

### → Bug:

Bugs are errors in codes of your program that make your program function improperly. There are two types of bugs.

→ Syntax bugs — caused by programmer it could be spelling mistakes.

→ Logical bugs — which means that computer is able to carry instructions but doesn't act as the programmer expects.

### → Debug:

Debugging is the process of fixing of locating and fixing errors in a computer.

- It removes the bugs from computer and tends to function properly.

→ It helps to identify coding errors at various stages of development.

## 2) SYNTAX ERROR & LOGICAL ERROR:

an error in

→ Syntax error is the source code of a program. Computer programs must follow strict syntax to compile correctly, any aspects of the code that do not conform to the syntax of the programming language will produce a syntax error. E.g. Spelling mistakes.

→ Logic error or logical error is a 'bug' or mistake in program's source code that results in incorrect or unexpected behaviour. It is type of runtime error that may simply produce the wrong output or may cause a program to crash while running.

E.g. Multiplying two numbers instead of adding them also produce unwanted results.

## (C) COMPILER & ASSEMBLER:

### → COMPILER:

Compiler is used to translate an high level programming language code to machine level code to create an executable program. Compiler checks the error in the program and reports them.

→ Components are lexical analyzer, syntax analyzer.

→ E.g. C++, Java compilers.

### → ASSEMBLER:

Assembler is used to translate an assembly <sup>level</sup> code to machine readable code. Also checks the correctness of each instruction and reports the diagnosis report.

→ Assembler does work in two passes -

→ Binary version of machine code.

E.g. GAS, GNU Assemblers.



# (D) SYSTEM SOFTWARE & APPLICATION SOFTWARE.

## → SYSTEM SOFTWARE:

- Close to system.
- Fast in speed.
- Difficult to design.
- Difficult to understand.
- Less interactive
- Smaller in size.
- Difficult to manipulate.
- Written in low level language.

## → APPLICATION SOFTWARE:

Those software which is used to perform specific tasks of the computer are known as application software.

- This perform only a single task
  - Anti-Viruses → Norton Anti-virus.
  - Text editing → Wordpad
  - Presentation Making → MS ~~Power~~ Power Point.
  - Compress software → WinZip, WinRAR.

## (E) <sup>Level:</sup> Low Language & High Level Language

### → Low Level Language:

→ Computer language consisting of mnemonics that directly correspond to machine language.

→ Very close to machine language.

→ Concentrate on machine architecture.

→ Assembly language

→ Mnemonic, binary, hexadecimal.

→ Difficult for user to read and write.

→ Faster, no need to compile.

→ More efficient

### → High Level Language:

→ Basically symbolic language that use English words and symbols rather than mnemonic codes.

→ Machine-independent language

→ Concentrate on the logic of problem

→ C, C++, Java.

→ Simple English and Mathematics symbol.

- Need compiler or interpreter.
- Translate into machine code
- Low speed execution