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Subject

Intro to computer programming

Instructor

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Q1 (a) Write an algorithm and draw a flowchart that will read the two sides of a rectangle and calculate its area.

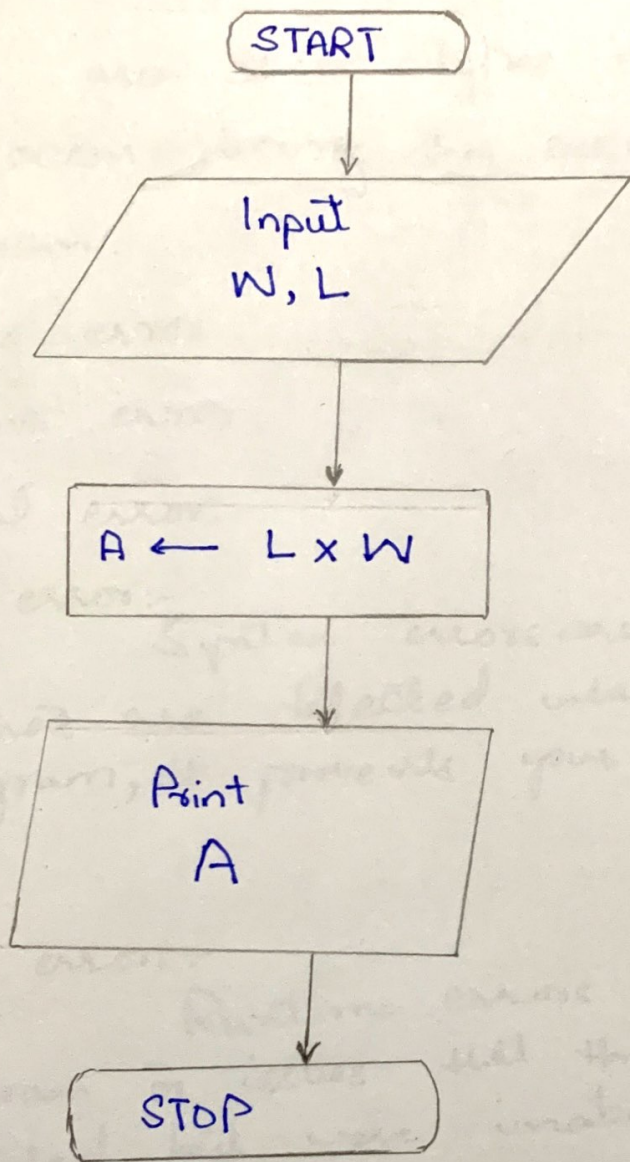
Ans Pseudocode:-

- Input the width (W) and length (L) of a rectangle
- calculate the area (A) by multiplying L and W
- Print A

Algorithm:-

- Step 1 :- Input N, L
- Step 2 :- $A \leftarrow L \times W$
- Step 3 :- Print A

Flowchart:-



Q1 (b) Name different types of errors which can occur during the execution of a program. (3)

Ans There are three types of errors which can occur during the execution of a program.

- 1) Syntax error
- 2) Runtime error
- 3) Logical error.

1) Syntax error:-

Syntax errors are grammatical errors that are detected when you compile the program, it prevents your program from execution.

2) Runtime errors:-

Runtime errors imply bugs in the program or issues that the developers had expected but were unable to correct. For example, insufficient memory can often trigger a runtime error.

3) Logical error:-

A logical error is a mistake in a program's source code that results in incorrect or unexpected behaviour.

Q2 (a) Design an algorithm that reads two values, determines the largest value and prints the largest value with an identifying message. (4)

Ans Algorithm:-

Step 1 : Input VALUE1, VALUE2

Step 2 : if (VALUE1 > VALUE2) then

MAX ← VALUE1

else

MAX ← VALUE2

endif

Step 3 Print "The largest value is", MAX

Q2 (b) what do you understand by the term "Maintain and update the program"

Ans Maintenance and update are the modification of a software product after delivery to correct faults, to improve performance or other attributes or to adapt the product to a modified environment. An update is a new, or fixed software which replaces the older versions of the

Same software, For example updating your operating system bring it up-to date with the latest drivers, system utilities and security software updates. They are often provided by the software publisher free of charge.

Q3 Differentiate b/w the following

a) Bug and Debug

Bug

- 1) In a computer program that produces an incorrect or unexpected result
- 2) Most bugs arise from mistakes and errors made by people in either a program's source code or its design
- 3) Bug is a software error / fault / issue

Debug

- 1) Debugging is the process of locating and fixing the error
- 2) Debugging is a necessary process in almost any new software or hardware development.
- 3) Debug is a process to make software bug free

b) Syntax or logical error:-

Syntax error:-

- * A violation of the rules of the programming language
For example in C++, each statement must end with a semicolon (;)
- * Compilers detect syntax errors at the time of the compilation.
- * These errors are easy to locate and remove because compiler specifies the location and type of error.

Logical error:-

- * Occur when the programmer uses an incorrect calculation or leaves out a programming procedure.
Example, failure to include a calculation of overtime hours in a payroll program is a logical error.
- * Logical errors are not detected by the compiler and thus the programmer has to check the entire coding of a C program line by line.

c) Compiler and Assembler:-

(7)

Compiler:-

- * Translates high level language into machine code.
- * Translates all the code at the same time.
- * Only needed once to create an executable file.
- * Will only inform you of the first error it finds.
- * Once compiled run quickly but compiling can take a long time.

Assembler:-

- * Translates assembly language into machine code
- * Uses the processors instruction set to convert.
- * Runs quickly as conversation between two low level languages is just reliant on the processors instruction set.

d) System Software & Application Software

System Software:-

- * The softwares which provide a platform for the user to interact with the hardware of a computer are known as system softwares
- * System software are needed to run application softwares
- * Run in the background and act as a platform
- * Example: language processors, operating systems and disk drivers.

Application Software:-

- * Those softwares which run on an ~~operating~~ operating system (OS is a system software) serving specific purpose are called application software.
- * Application softwares are not needed to run system softwares.
- * Run in the foreground and interact with the user.
- * Example :- video players, text editors and browsers.

e) Low level language & High level language

Low level language:-

- 1) Understood by computers without the need for translation.
- 2) Difficult for humans to read and understand.
- 3) Take up a lot of space to write down.
- 4) Its difficult to spot errors in the code.

High level language:-

- 1) All used to solve programs.
- 2) Easily understood by humans.
- 3) Uses English like words.
- 4) Easy to locate and identify errors.
- 5) Must be translated before the computer can understand it.