Welcome to module #13programming fundamentals using C

unit 4 algorithms for problem solving module name. To find the

square root of an integer and a factorial of a given number. I

miss Azia D'Silva will guide you today through this

module. Let's have a look at the outlines. Definition of square root of an integer algorithm to

find square root of an integer.Definition of a factorial flow chart to find factorial of a number. An algorithm to find factorial of a number at the end of this class, every student will be able to construct an algorithm to find square root of a number and construct algorithm to find a factorial of a number.

Let's have a look at the first outline of today's class.

Definition of square root.

In mathematics, square root of a number X is a number Y that is a perfect square of X. For Example, square root of X is equal to Y, where y * y is X.Let us consider some more

examples. Sqrt 4 is 2 where2 * 2 is 4. Square root of a number 9 is 3with 3 * 3 is equal to 9 that

means. Three is a number which divides 9 in equal parts algorithm to find square root of

a number. We start with the key word start.

Step one, start
Step2, Declare NUM start and mid answer.

Not step #3 except num and initialize start equal to 0 and is equal to NUM and the answer is equal to 0.

Step 4 If none is equal to 0 or number is equal to 1, that is the entered number by the user is zero or one jump to
 step #6 letters. Print The answer as a square root of the number.

Step four, run a loop until start is less than equal to end.

An calculate the meat of a number. Start plus N / 2 will yield us the mid .

Now check if need multiplied by Mid is less than or equal to

the entered number, then start is equal to mid + 1. An answer equals feed if the condition made multiplied by made less than equal to NUM is not satisfied. The control of the program goes to the else statement. An end is updated as mid - (minus) 1.
Let us understand this algorithm with an example. We consider a number4 at the start. Initially start

is equal to 0 and is equal to 4meters calculated as 0 + 4 / 2 which yields 2.

Then if mid multiplied by mid is < less than or = equal to 2,

Than is 2 * 2 is equal to 4. It holds true and thus answer is printed as need an mid becomes. The answer let us consider an example number is equal to 4.

Start this equal to 0. An end isequal to four. Let's calculate mean 0 + 4 / 2 is equal to two. Now the condition is checked, made multiplied by mid less than equal to NUM. Yes that is 2 * 2 is equal to 4 and thus answer is equal to mid , and meet is discarded and answer is printed as the square root of

the integer. So with this algorithm we find this example. Now, definition of a factorial is a product of all

positive integers less than or equal to the given number that is factorial of four. We write it as 1 * 2 * 3

* 4 which is equal to 24.

Factorial of 12 is 1 *2 * 3 * 4 and

so on till 11 * 12,which yields 479001600 .
thenotion of a factorial. We use a sign exclamation mark that is factorial of X is denoted as X! exclamation mark.

Similarly for the numbers, 2 factorial is denoted as 2! exclamation, an factorial of 2 is calculated as 1 * 2, which is equal to 2.

Factorial of 45 is denoted as 45exclamation and red is 45

factorial.

Let's move on to algorithm to find factorial of a number. Step one, start Step2, read the number N.

That is the number of whose factorial is to be found. Step three initialize I is =1. An factorial is equal to

1. So initially I is 1 and the factorial is also one.

At Step 4, using a loop. Repeat Step 4 through 6 until I equals 1. I is used as an

incrementing variable and check for every iteration .
at Step 4 whether it is equal to N.

Step 5 factorial thus calculated as fact multiplied by variable I.
At step six, I is equal to I + 1.

Step 7 Print the factorial and step eight stop.

Example an is equal to 2.

I is first initially. One fact is also 1.

I is less than equal to two holds true.

Fact is equal to 1 * 1 = 1. NI is incremented by one and becomes 2.

Now go to step four that is.

Step 4 is repeat 4 through 6 until I is equal to 1 again, the

value of I that is the incremented value of I is checked with. N I is less than equal to two.

Holds true.

An factorial is again calculatedas 1 * 2 is equal to 2.

Value of I is again incremented by one and it becomes 1 + 2 =3. I is less than equal to two holes. False 2's Factorial equal to two.

References for this tutorial,problem solving and program

design in C by JerryHanley, Eloit B Kaufman,
Web references
Mathsisfun.com,
geeksforgeeks.org and

britannica.com.

Thank you.