Assignment no-9

Date ______Paga ___

Classmata

Title - Find factorial of given number

Problem Statement - Write X86 ALP to find factorial of given integer number on a command line by using recursion Explicit stack manipulation is expected in the code.

Objective - To understand how to use stack segment for recursion

outcome - student will study recursion using stack

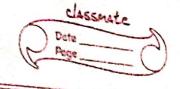
5/w and H/w requirements - core 2 duo i3/i5,i7, 05 Linux 32/64 bit, editor : gedit, Assembler : NASM, Debugger : GDB

Concept related theory-

PUSH -> Push operand onto the stack

push decrements the stack pointer by 2 if
the operand size - attribute of the instruction is
16 bit, otherwise it decrements stack pointer by 4
Push the places the operand on the new
top of the stack, which is pointed to by
stack pointer.

The 80386 push esp instruction pushes
the value of esp as it existed before the
instruction. This differs from the 80386. Where the
push SP pushes the new value.



POP - Pop word from the stack

- Pop replaces the previous contents of the memory, the register or the segment register operand with the word on top of 80387 stack, addressed by ss:sp laddress size attribute of 16 bit) or SS: ESP (address size, attribute of 32 bit)

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stack pointer SP is incremented by 2 for an operand size of 16 bit or by 4. For an operand size of 32 bit

Factorial -

Product of all positive integers less than or equal to given positive integer e.g 5 = 5x4x3x2x1=120

Algorithm -

Stort

1 Accept the number from user

@ convert the number into hex

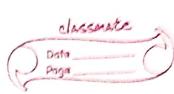
@ Compare accepted number with 1 If it is equal to 1 go to step 5 else push the number on stack and decrement the no and goto step 4.

Pop content of stack and multiply with number

Repeat step until stack become empty

convert the number from hex to ascii

Print the number



				Data Paga
	Testcases			
	Testcase	Expected OIP	Adual 01P	Result
_0	./a.out 05	78 <i>H</i>	7.8.H	Pass
D	./a.out 04	18H	1811	Pass
3	la out ou	Factorial is	Factorial is 0001	Pass
4)	.10.0ut 06	02D0	0200	fass
	aland and soc	In this way ursively find operations (p	we studied the the factorial with and pop)	ne use of of number