

Exam 3 Study Guide

Show how to pass argument by reference on stack

Show how to pass argument by value on stack

Show how to create a local variable in a procedure

```
push    ebp
mov     ebp, esp
sub     esp, 4
lea     eax, [ebp-4]
```

Show how to create a stack frame

Show how to restore the caller's stack frame

What is enter instruction?

creates stack frame in a procedure
 push ebp to the stack
 set ebp to the base pointer
 reserve space for local variables

What is leave instruction?

terminates stack frame in a procedure
 free local space

What is lea instruction?

store the address of a local variable into a register
 instead of its value

What is recursion?

A procedure that calls its self

What are cld, std instructions?

cld clear the direction flag
 std set the direction flag
 esi and edi are inc / dec based on the
 DF

What is repeat instruction?

rep is a prefix that can be used in front of some instructions to repeat said instructions

What are movsb, movsw, and movsd instructions and what do they do?

copy data in byte, word, dword respectively from the address pointed by esi into the address pointed by edi

esi and edi are inc/dec based on the DF flag after each operation

What are cmpsb, cmpsw, and cmpsd instructions and what do they do?

compare the value in byte, word, dword respectively at the address pointed by esi to the value at the address pointed by edi.

What are scasb, scasw, and scasd instructions and what do they do?

compare byte, word, dword at the address pointed by edi to AL, AX, EAX respectively

What are stosb, stosw, and stosd instructions and what do they do?

Store the value from AL, AX, EAX into the address pointed by edi respectively

What are lodsb, lodsw, and lodsd instructions and what do they do?

load a byte, word, dword into AL, AX, EAX respectively from the address pointed by esi

What is struct?

a preprocessor macro
a collection of data

What is string? Why does string have to be null terminated?

string is an array of characters
Null at the end of a string marks the end of a string
many operation relies on null to stop

Binary Multiplication

128 x 128

93 x 45

$$\begin{array}{r}
 93 \\
 64 \\
 \hline
 29 \\
 16 \\
 \hline
 13 \\
 8 \\
 \hline
 5 \\
 4 \\
 \hline
 1 \\
 1 \\
 \hline
 0
 \end{array}
 \qquad
 \begin{array}{r}
 45 \\
 32 \\
 \hline
 13 \\
 8 \\
 \hline
 5 \\
 4 \\
 \hline
 1 \\
 1 \\
 \hline
 0
 \end{array}$$

$$\begin{array}{r}
 0101110100000 \\
 001011101 \\
 \hline
 00000000000000 \\
 01011101 \\
 010111010100 \\
 \hline
 0111010001 \\
 001011101000 \\
 \hline
 10010111001 \\
 0101110100000 \\
 \hline
 1000001011001 \\
 4096 \qquad 64 \ 16 \ 8 \ 1
 \end{array}$$

$$\begin{array}{r}
 4096 \\
 64 \\
 \hline
 4160 \\
 25 \\
 \hline
 4185
 \end{array}$$