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1.

- A) RandomRange
- B) WaitMsg
- C) WriteDec
- D) Gotoxy

2. A) The current value of ESP will be decremented by 4 since 32 bit = 4 bytes.

B) The runtime stack is used by a process that is in running mode which the process uses to store variables, parameters, return addresses, manage function calls and general execution of a program. Data in the runtime stack follows the LIFO principle. The Stack ADT is defined within a programming language that follows the LIFO method of pulling (pop) and storing (pushing) data. So, the main difference is that one is defined at runtime by the OS using CPU instructions for the running process whereas the other is an ADT and defined within a programming language to be used as a data structure to manage data by the user/coder in their development endeavor. This is basic knowledge obtained from COMP-3300 and COMP-2540 so no references needed.

3. Assuming promptString is declared as a DWORD and id is declared as an array of bytes.

A) pushad ;push all general registers

mov edx, OFFSET promptString

call WriteString

mov edx, OFFSET id

mov ecx, SIZEOF id

call ReadString

popad ;pop all general registers

B) mov edx, OFFSET promptString ;Prompt string would contain our prompt message

call WriteString ;Prompt our user

mov edx, OFFSET id ;Read string of num into array

mov ecx, SIZEOF id ;idLen contains the length of our id

Call ReadString

4. Call Area1 is pushed onto stack so ESP decreased by 4.

Call Area2 is pushed onto stack so ESP decreased by 4.

Call Area3 is pushed onto stack so ESP decreased by 4.

Call Area4 is pushed onto stack so ESP decreased by 4.

Area4 returns popping return address off stack so ESP is increased by 4.

Area3 returns popping return address off stack so ESP is increased by 4.

Area2 returns popping return address off stacks so ESP is increased by 4.

Lastly, Area1 returns popping return address off stack so ESP is increased by 4.