Stack and Heap

Stack and Heap memory

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Overview

1 Stack and Heap



- Memory model used so far is a simplification.
- Actually two places in memory that variables can go.
 - The stack and the heap.
- Both are just regions of the same physical memory.
 - Are managed differently.



- When program is run, block of memory is allocated.
 - Called the stack.
- Each program has it's own stack.
 - Each instance.
- As variables created and functions called they are put on the stack.
- When variables are destroyed/functions complete they are removed from the stack.
- Has limited size.
 - Recursive functions can fill the stack if not careful.



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Recap
```

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int add( int a, int b)
  int result = a+b;
  return result;
int sub( int a, int b )
  int result = a-b;
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int main()
  int var1 = 42;
  int var2 = 1;
  add(a,b);
                             Stack
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- Shared memory between all running programs.
- Very big in comparison to the stack.
- Dangerous, must remember to deallocate our memory.
 - Memory leaks.



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Heap
Recap
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```
int main()
  int variable = 42;
  int *pointer1;
  pointer1 = new int[6];
  int *pointer2;
  pointer2 = new int[3];
  delete [] pointer1;
  return 0;
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The End

