1 Inheritance

Consider the following example of simple inheritance in c++. It includes a derived class "Child" that inherits from the base class "Parent." It inherits Parent's x and y members and also has a public member of it's own, "luckyFin."

```
class Parent
{
   public:
      void setX(int w)
      {
         x = w;
      }
      void setY(int h)
      {
         y = h;
      }
   protected:
      int x;
      int y;
};

// Derived class
class Child: public Parent
{
   public:
      int xPlusY()
      {
         return (x + y);
      }

      int luckyFin;
};

int main(void)
{
   Child * nemo = new Child();

   nemo->setX(2);
   nemo->setY(3);

   int add = nemo->xPlusY();

   return 0;
}
```

The resulting assembly code is too long to list in full but snippets will be shown as the topics they are relevant to are discussed.

1.1 Data Layout

The following x86 snippet shows the initializtion of the nemo object.

```
1   call  _Znwj
2   add   esp, 16
3   mov   DWORD PTR [eax], 0
4   mov   DWORD PTR [eax+4], 0
5   mov   DWORD PTR [eax+8], 0
6   mov   DWORD PTR [ebp-12], eax
7   mov   eax, DWORD PTR [ebp-12]
```