

## HW11 - Function Pointers and Virtual Functions [100 pts]

Answer the following questions by modifying the hw11.cpp source file and/or answering the question directly:

1. [read [learncpp.com - function pointers](http://learncpp.com - function pointers), read [cprogramming.com - function pointers](http://cprogramming.com - function pointers)] Answer Q#1 related questions listed in *main*. Indicate if an operation is not allowed and explain why.
2. [read [learncpp.com - function pointers](http://learncpp.com - function pointers), read [cprogramming.com - function pointers](http://cprogramming.com - function pointers)] Complete the implementation of the *selectionSort* function and associated *ascending*, *descending* comparison functions. Complete the implementation of your own *custom\_sort* sorting algorithm. Explain how *custom\_sort* sorts array components. Answer Q#2 related questions listed in *main*.
3. [read [learncpp.com - the virtual table](http://learncpp.com - the virtual table), read [wikipedia - virtual method table](http://wikipedia - virtual method table)] Complete Q#3 written answer. Refer to *Base*, *D1*, *D2* & *D3* classes. Fill out missing details for class vtables.
4. [read [learncpp.com - the virtual table](http://learncpp.com - the virtual table), read [wikipedia - virtual method table](http://wikipedia - virtual method table)] Complete Q#4 written answer. Refer to *main* [Q#4].
5. [read [geeksforgeeks.org - object slicing](http://geeksforgeeks.org - object slicing), read [wikipedia - object slicing](http://wikipedia - object slicing)] Complete Q#5 written answer. Refer to *main* [Q#5].

Include comments in your code to indicate which code segment answers which question. Appended written answers to the bottom of the hw11.cpp source file (as source comments via `//`).

Use the command script to capture your interaction compiling and running the program, including all operations, as shown below:

CS1C Summer 2019 MTWTH HW11 100 pts **Due: Th 7/11/2019**

## HW11 - Function Pointers and Virtual Functions [100 pts]

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ script hw11.scr
```

```
Script started, file is hw11.scr
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ date
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ ls -l
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ make all
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ ls -l
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ ./hw11
```

```
... // print out output from steps 1 thru 5
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ exit
```

```
Script done, file is hw11.scr
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/11 $ make tar
```

```
...
```

Submit the tar package file hw11.tar to by Thursday July 11, 2019.