COEN79 Assignment 0

Q1: There are two general categories of data types;

① primitive/standard data types, which include:
- int, char, float, double, boolean, void, w-char

② user-defined data types
- typedef, enumeration, class/object, structure.

data types are important because they tell us what kind of data we are working with. Since every data type has its own structure, characteristics, and behaviors, knowing which type a data is allows us to gain access and perform algorithms on it accordingly. We can make data have more than one implications because of the different types and value ranges. In addition, labelling data with types will help us find errors in the program, and combine similar data into a big class, which will help with organization and clarity.

Q2:

procedure programming	Object-Oriented programming
• programs divided into functions/procedures	• programs divided into objects
• follows top-down approach	• follows bottom-up approach
• difficult to add new functions	• Easy to add new functions based on hierarchy in the classes
• less secure with data	• more secure with data
• Have to rewrite every line for modification	• minimize development time of future objects
• Limited application to the real world	• Generally uses concept of the real world.

Q3: Evolution of a star

Star
- Cloud of gas and dust
- Hydrogen and Helium Core

Low-Mass Star
- Everything from protostar
- With mass of 13 Jupiter masses

Protostar
- Everything from star
- Nuclear fusion
- temperature rise
- Core shrink, start to shine

tiny-Mass star
- Everything from Protostar
- with mass < 0.8 M

Red Giant
- Everything from Protostar
- Helium runs out
- Star expands and cools
- Core collapses and heats up

Brown Dwarf
- Every thing from tiny-Mass
- fusion energy slowly burns the core
- Not enough energy Produced to push layer out

High-Mass Star
- Everything from protostar
- with mass larger than Sun

Planetary Nebula
- Everything from Red Giant
- Outer layer ejected
- layer leftovers form a shell

Blue SuperGiant
- Everything from High-Mass
- Changes in structure/material of the core from He to He, C, O, Ne, Si, and Fe
- changes fusion types

White Dwarf
- Everything from planetary Nebula
- glow fiantly with last fuel
- Final stage of the star

SuperNova
- Everything from Blue Supergiant
- Outer layer bounces off the core to create explosion
- All elements are ejected

Blackhole
- Everything from SuperN
- core collapses
- Helium fusion starts
- Gravity Collapse on one point after Supernova explosion
- remnant of explosion greater than 1.4 to 3 solar Masses

Neutron star
- Everything from SuperNova
- protos and electrons combined to form neutrons
- remnant of explosion < 1.4M