MSTR STE
15-0x17-6

LANAI
20-6x18-0

firepl

BBQ PORCH

NOOK
11-10x12-4

M BATH

6' tub

WIC
10x12

bartop

FAMILY RM
19-5x19-0

firepl

BEDRM
12-8x12-1

wic

KITCHEN
14-5x15-1

EXER
11-9x10-5

UTIL
7-5x9-4

pan.

DESK
8-10x6-11

drs

ba

seat/coats

to bsmt

to bonus

FOYER
10-3x12-0

DINING RM
12-3x14-0

wic

drs

BATH

clo

BEDRM
12-1x11-11

3 CAR GARAGE
23-7x35-5

STUDY/GST
11-5x11-3

PORCH
20-6x7-7

http://www.floorplans.com/house-plans/fp/styles/craftsman-home-plans-craftsman-floor-plans/aflfpw73227.html

Homework #2 Floor Plan Layout Designer
(Week 3-5)

Develop a set of classes that can be used to create a C++ program to generate a floor plan.

The definition of classes should take into consideration all the design needs for the various types of space of a house or a building layout.

A) Layout is a drawing or graphic. Its basic underlying concept is geometry. Geometry is the basis for shape, which can be described in terms of geometrical entities, such as point, two points form a line segment, contiguous segments form a polyline, if endpoints of a polyline are the same a polygon is formed. Multiple areas and lines can be contained inside of an envelope.

A common data structure or class hierarchy for graphical layout could be:

> (Graphic (geometry (envelope, multipoint, point, line, polygon, polyline), symbol (marker, textSymbol, lineSymbol, pictureFillSymbol, simpleFillSymbol), attributes, layers)

B) For design purposes, space analysis may be required. The analytical tools can use both geometry and topology of the graphical entities involved in the design.

> (GeomEngine (spatialComp (difference, join, intersect), spatialRelation(contains, crosses, equal, touches, within, intersects, adjacent), spatialMeasure(distance, offset, area, length), tookBox (convexHull, extension, expansion, anchor))

C) The layout design activity consists of considering the commonly accepted norms (and local governmental regulations) of the utilization of the space and its surroundings.

In a public venue, such as a school building, the spaces may consist of offices, hallways,

classrooms, restrooms, auditorium, gym, etc.

In the example of a house, the space can be arranged based on the purpose or activities within the space, such as bedroom - space for sleep, kitchen for cooking, dining room or breakfast nook for eating, bathroom for washing, etc. (see figure)
http://www.floorplans.com/house-plans/fp/styles/craftsman-home-plans-craftsman-floor-plans/aflfpw73227.html

The data structure or class hierarchy that can be used to represent the above sample house plan:

(Space (Garage (garage1, garage2, garage3), Bedroom (masterSuite, bedRM1, bedRM2), FamilyRM, Kitchen, Bathroom (j&j, mBath, guestBath), commonSpace (foyer, stairwell, study/guestRm, secretaryDeskArea, nook, exerciseRm, diningRm, utilityRm, patio, frontPorch, lanai/roofedVeranda, bbqPorch), Surrounding (lawn, landscape, landmark, lot, neighborhood, view)))