RUNNING OpenGL on VISUAL STUDIO 2005

Step 0: GLUT Installation (only needs to be done once)

Windows comes with OpenGL, and Visual Studio comes with the OpenGL libraries, but neither of them comes with GLUT. Get the newest version of GLUT here: GLUT 3.7.6 for Windows.

Put the following files in the following locations:

Install Glut into the following directories:

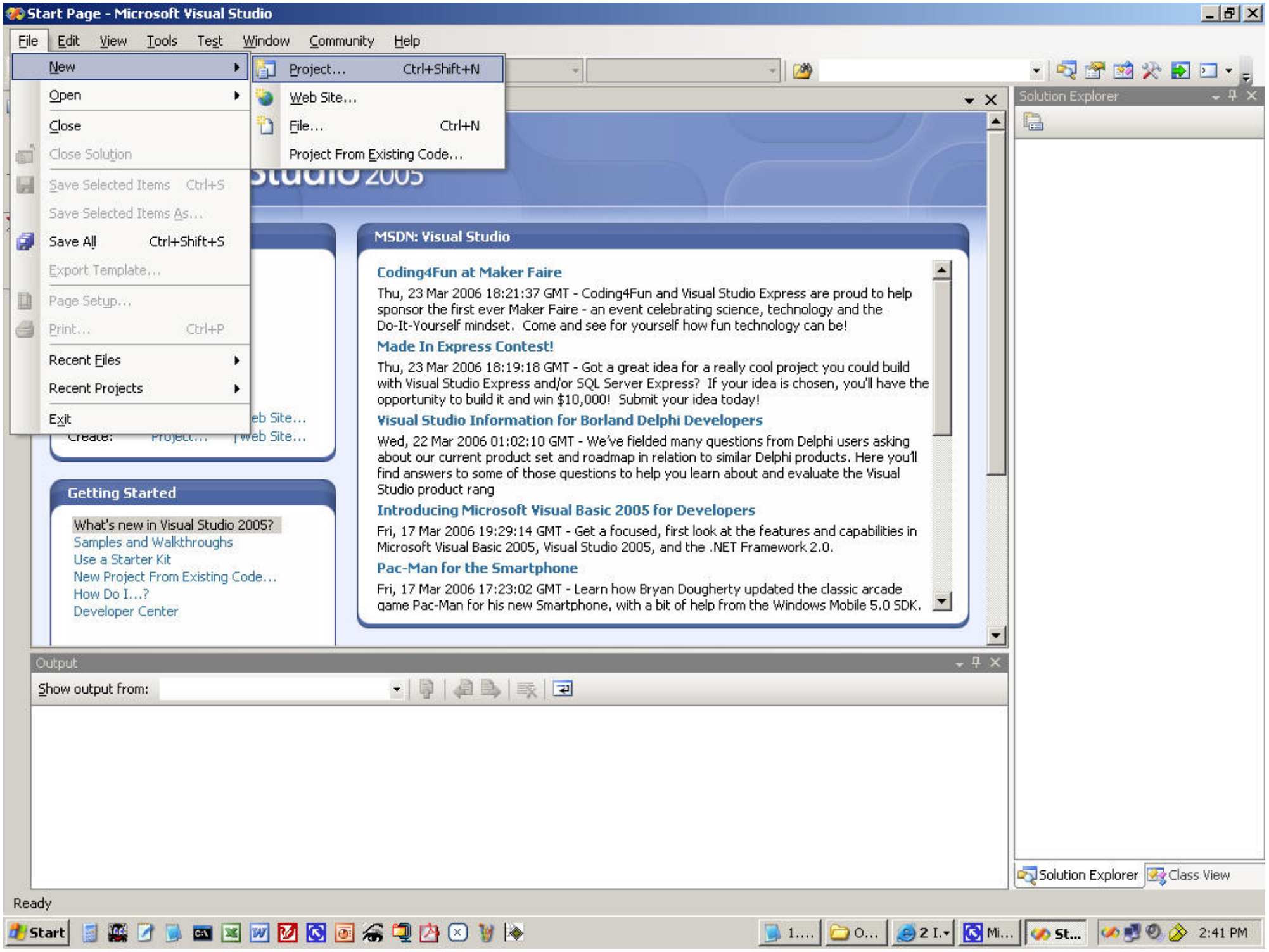
glut32.dll - > C:₩Windows₩System or C:₩WinNT₩System
glut32.lib - > C:₩Program Files₩Microsoft Visual Studio 8₩VC₩PlatformSDK₩lib
glut32.h - > C:₩Program Files₩Microsoft Visual Studio 8₩VC₩PlatformSDK₩include₩gl

Note:
If you plan on giving your program to friends to run using Windows, you must also include the glut32.dll file. If they don't have this file in the same directory as your application or in their C:₩WINDOWS ₩system folder, the program will not run.

Step 1: Create a Visual Studio 2005 Project

To create an empty console project in Visual Studio, do the following:

1. Create a new project (File ---> New ---> --->Project


Start Page - Microsoft Visual Studio
File Edit View Tools Test Window Community Help
New
Open
Close
Close Solution
Save Selected Items Ctrl+S
Save Selected Items As...
Save All Ctrl+Shift+S
Export Template...
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Exit
Project... Ctrl+Shift+N
Web Site...
File... Ctrl+N
Project From Existing Code...
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MSDN: Visual Studio
Coding4Fun at Maker Faire
Thu, 23 Mar 2006 18:21:37 GMT - Coding4Fun and Visual Studio Express are proud to help sponsor the first ever Maker Faire - an event celebrating science, technology and the Do-It-Yourself mindset. Come and see for yourself how fun technology can be!
Made In Express Contest!
Thu, 23 Mar 2006 18:19:18 GMT - Got a great idea for a really cool project you could build with Visual Studio Express and/or SQL Server Express? If your idea is chosen, you'll have the opportunity to build it and win $10,000! Submit your idea today!
Visual Studio Information for Borland Delphi Developers
Wed, 22 Mar 2006 01:02:10 GMT - We've fielded many questions from Delphi users asking about our current product set and roadmap in relation to similar Delphi products. Here you'll find answers to some of those questions to help you learn about and evaluate the Visual Studio product rang
Introducing Microsoft Visual Basic 2005 for Developers
Fri, 17 Mar 2006 19:29:14 GMT - Get a focused, first look at the features and capabilities in Microsoft Visual Basic 2005, Visual Studio 2005, and the .NET Framework 2.0.
Pac-Man for the Smartphone
Fri, 17 Mar 2006 17:23:02 GMT - Learn how Bryan Dougherty updated the classic arcade game Pac-Man for his new Smartphone, with a bit of help from the Windows Mobile 5.0 SDK.
Getting Started
What's new in Visual Studio 2005?
Samples and Walkthroughs
Use a Starter Kit
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Developer Center
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Solution Explorer
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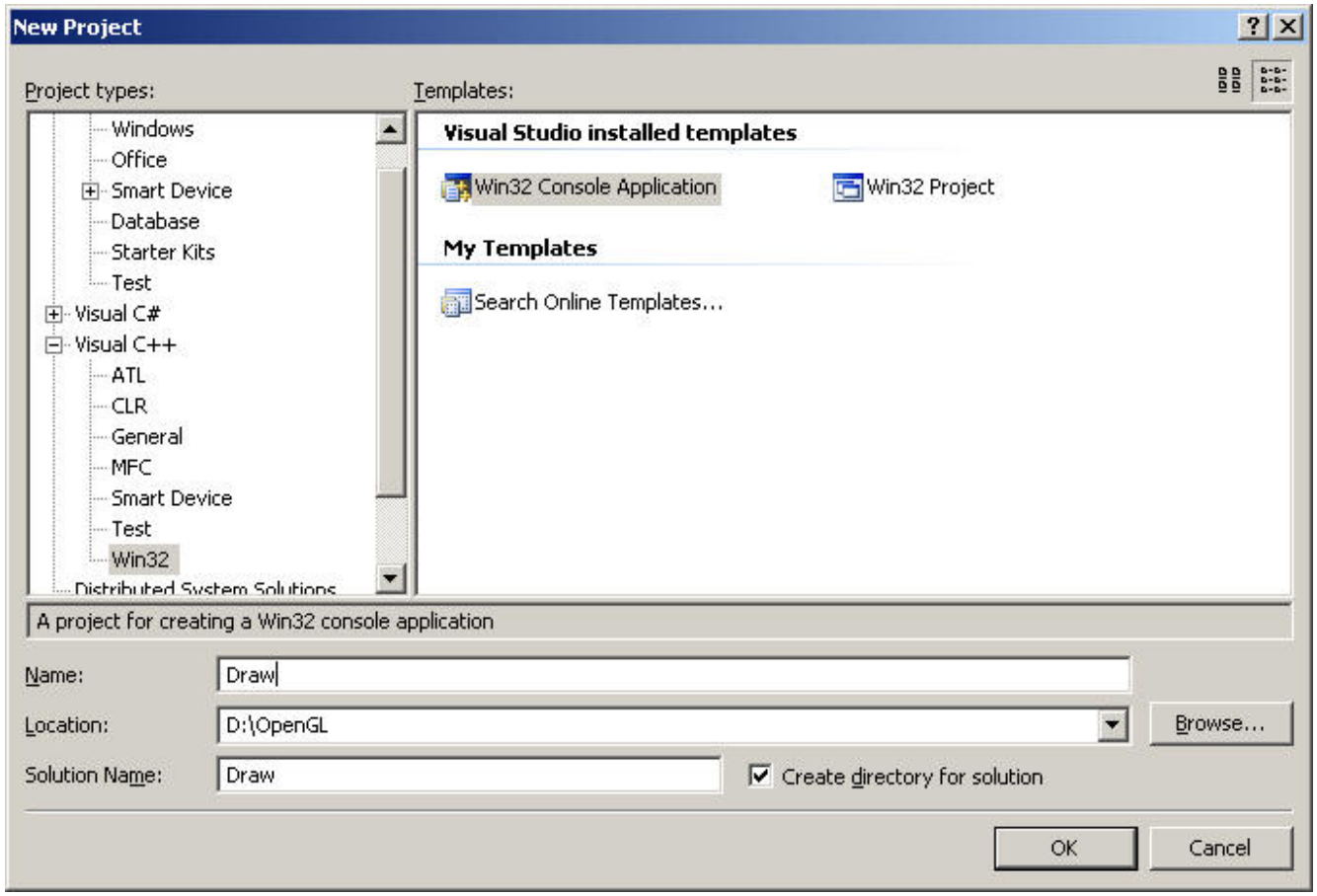
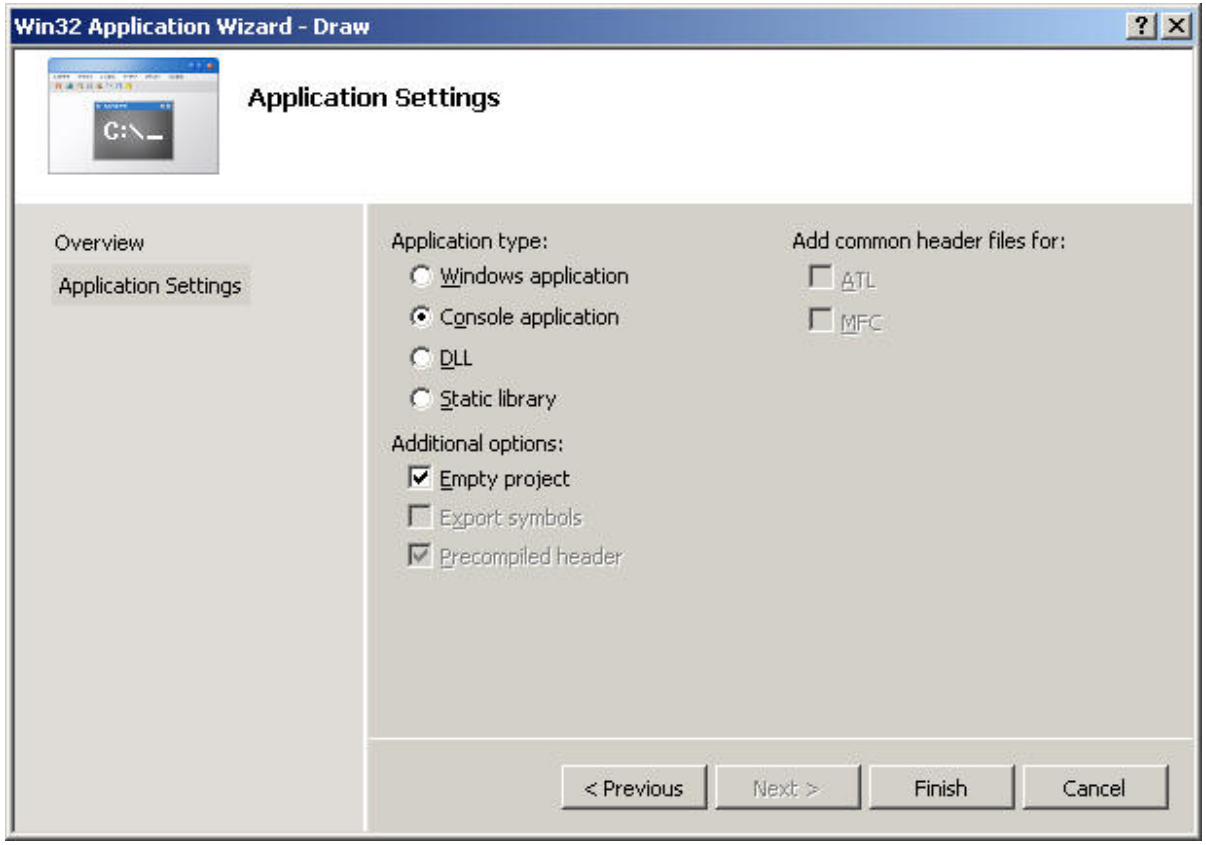
2. **In the** Project Types: **pane, select** Visual C++, Win32. **Then select** Win 32 Console Application **in the** Templates: **pane. Name your project, select the location for the project and click** OK.

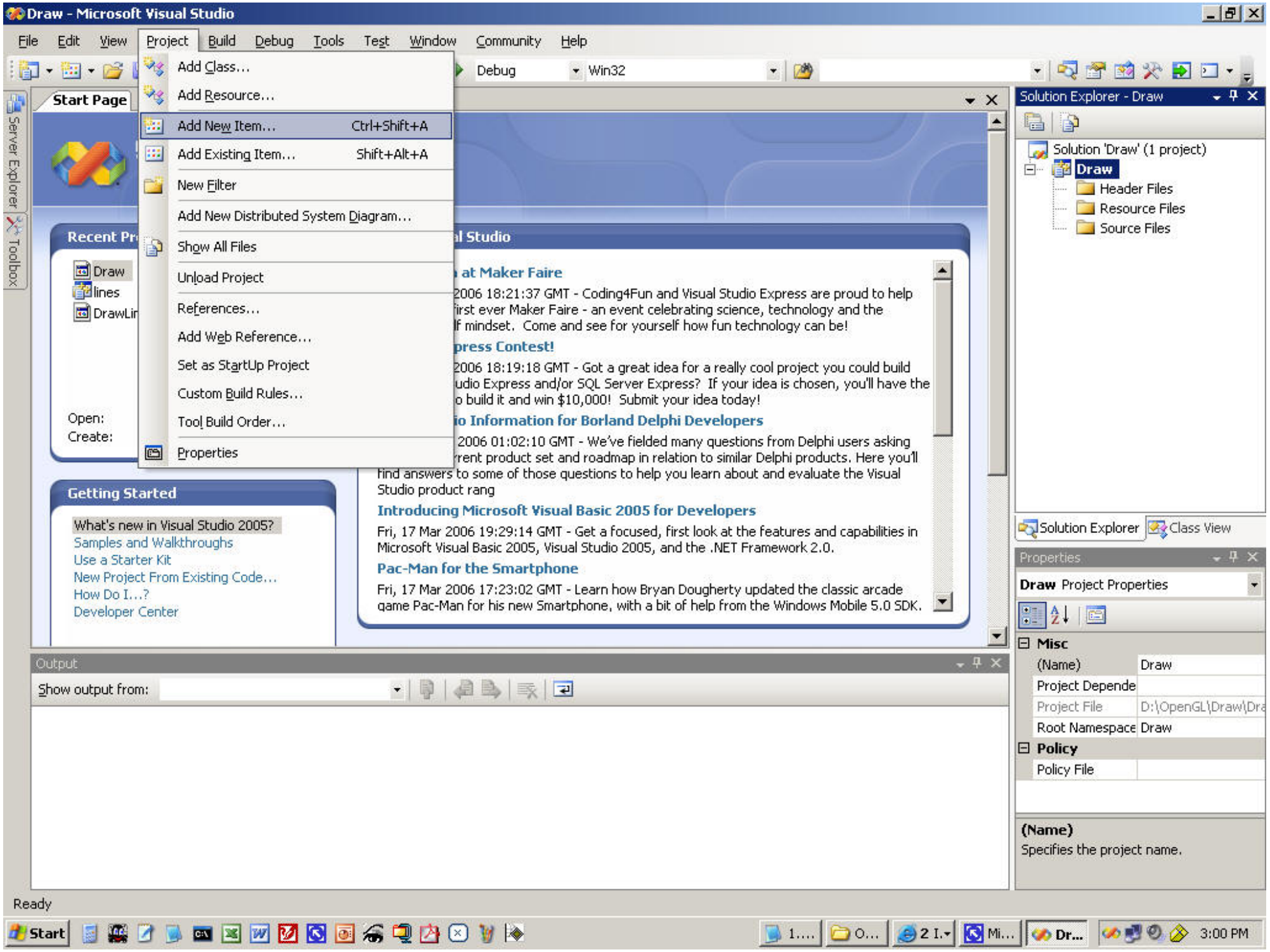


3. **Click the** Application Settings **tab on the left**, **and check the** Empty Project **box**. **Then click** Finish button.



Step 2: Add Source Code

1. **Select** Project, Add New Item .


Draw - Microsoft Visual Studio
File Edit View Project Build Debug Tools Test Window Community Help
Add Class...
Add Resource...
Add New Item... Ctrl+Shift+A
Add Existing Item... Shift+Alt+A
New Filter
Add New Distributed System Diagram...
Show All Files
Unload Project
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Add Web Reference...
Set as StartUp Project
Custom Build Rules...
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Solution 'Draw' (1 project)
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Draw Project Properties
Misc
(Name) Draw
Project Depende
Project File
Root Namespace Draw
Policy
Policy File
(Name)
Specifies the project name.
Output
Show output from:
Ready
Start
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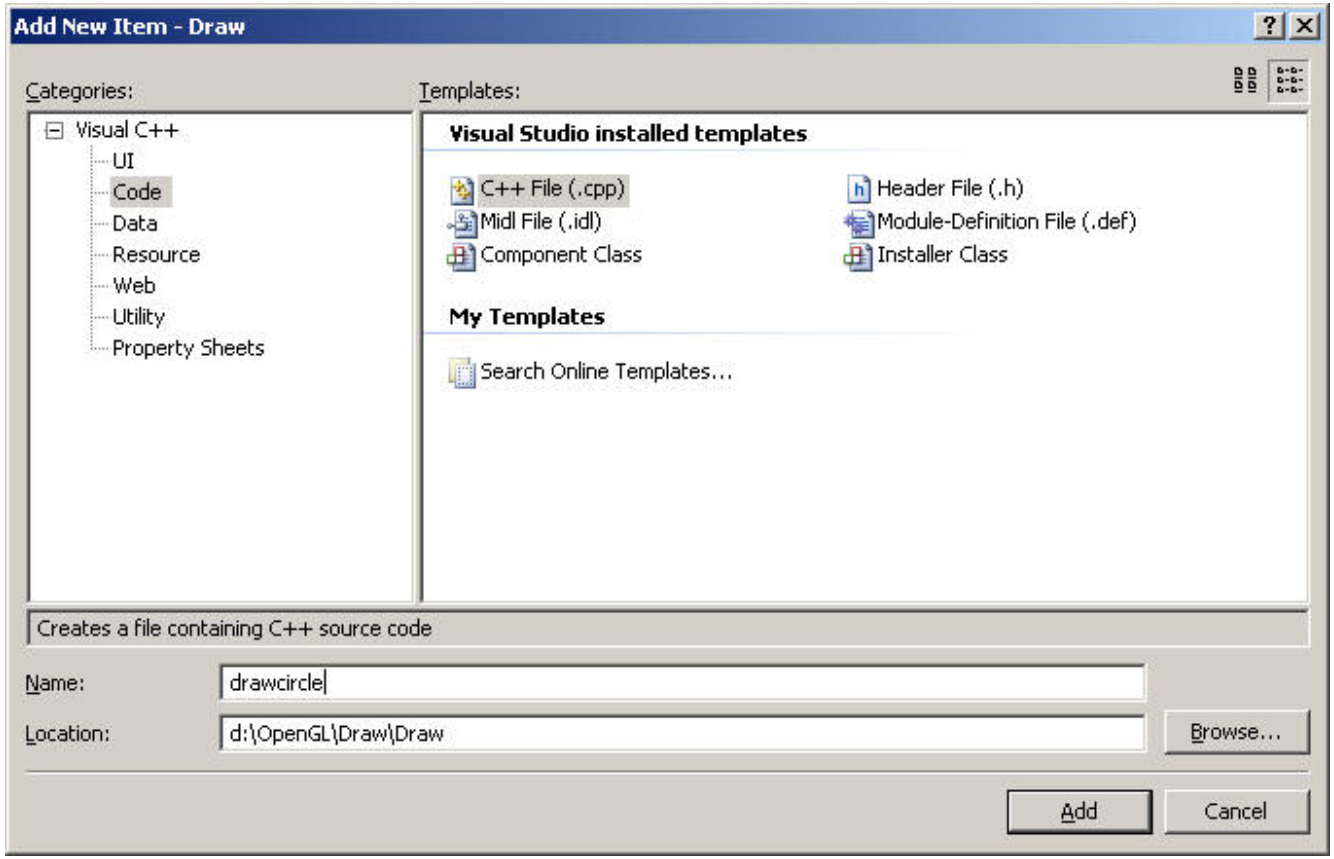
2. **In the** Categories **pane, select** Visual C++, Code. **Then select** C++ File(,cpp) **in the** Templates: **pane. Name your file, and then click** Add.



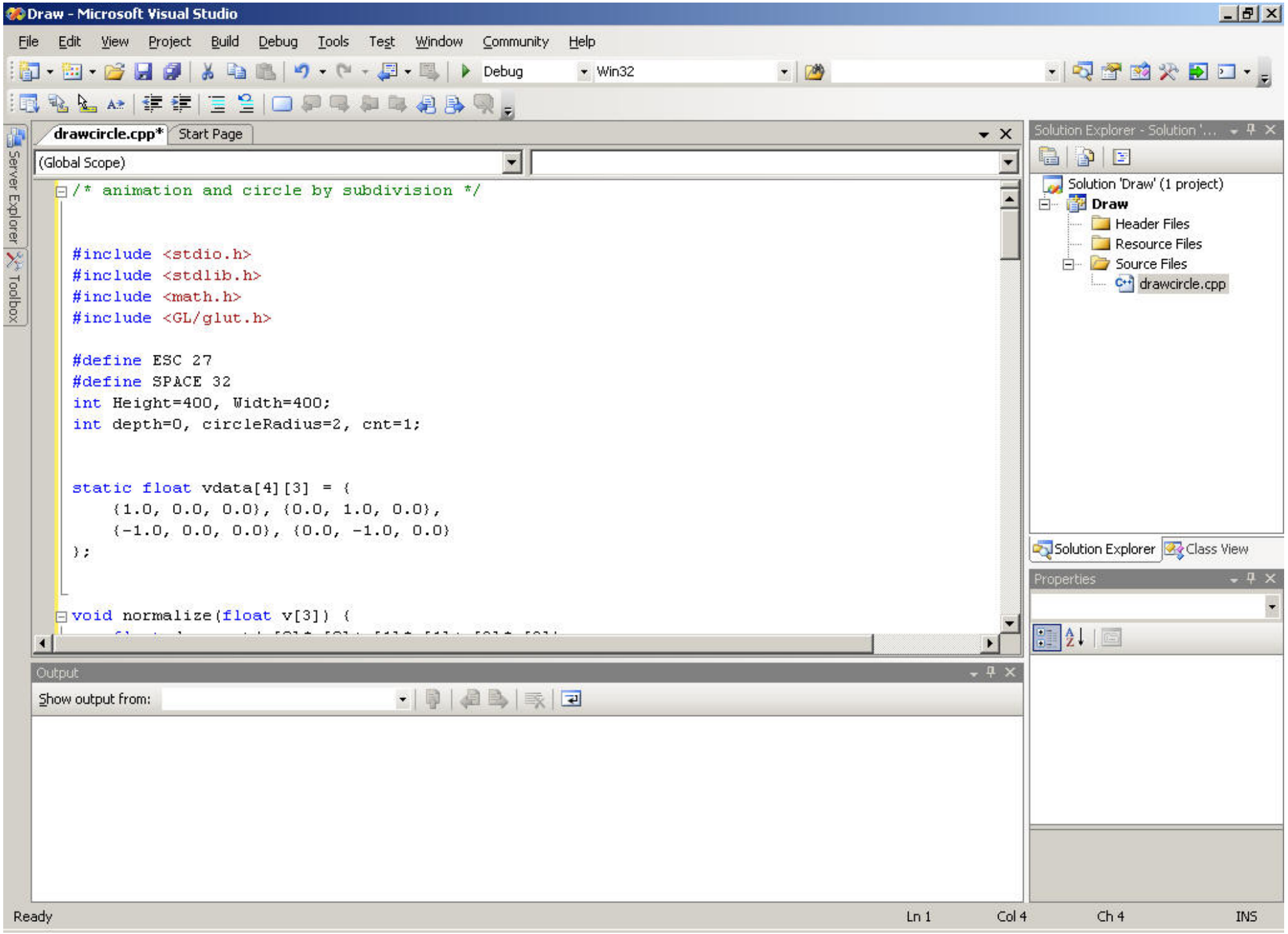
3. Copy and paste the code below into the file. Save your time of typing.

```
/* animation and circle by subdivision */


#include <stdio.h>
#include <stdlib.h>
#include <math.h>
#include <GL/glut.h>

#define ESC 27
#define SPACE 32
int Height=400, Width=400;
int depth=0, circleRadius=2, cnt=1;


static float vdata[4][3] = {
```

```
{1.0, 0.0, 0.0}, {0.0, 1.0, 0.0},
{-1.0, 0.0, 0.0}, {0.0, -1.0, 0.0}
};


void normalize(float v[3]) {
float d = sqrt(v[0]*v[0]+v[1]*v[1]+v[2]*v[2]);

if (d == 0) {
printf("zero length vector");
return;
}
v[0] /= d; v[1] /= d; v[2] /= d;
}

void drawtriangle(float *v1, float *v2, float *v3)
{
glBegin(GL_TRIANGLES);
glVertex3fv(v1);
glVertex3fv(v2);
glVertex3fv(v3);
glEnd();
}


void subdivideCircle(int radius, float *v1, float *v2, int depth)
{
float v11[3], v22[3], v00[3] = {0, 0, 0}, v12[3];
int i;

if (depth == 0) {
glColor3f(v1[0]*v1[0], v1[1]*v1[1], v1[2]*v1[2]);

for (i=0; i<3; i++) {
v11[i] = v1[i]*radius;
v22[i] = v2[i]*radius;
}
drawtriangle(v11, v22, v00);

return;
}

v12[0] = v1[0]+v2[0];
v12[1] = v1[1]+v2[1];
v12[2] = v1[2]+v2[2];


normalize(v12);
```

```
subdivideCircle(radius, v1, v12, depth - 1);
subdivideCircle(radius, v12, v2, depth - 1);
}


void drawCircle(int circleRadius)
// draw a circle with center at the origin in xy plane
{

subdivideCircle(circleRadius, vdata[0], vdata[1], depth);
subdivideCircle(circleRadius, vdata[1], vdata[2], depth);
subdivideCircle(circleRadius, vdata[2], vdata[3], depth);
subdivideCircle(circleRadius, vdata[3], vdata[0], depth);
}


void display(void)
{
if (circleRadius>Width/2 || circleRadius==1)
{
cnt=-cnt;
depth++;
depth = depth % 5;
}

circleRadius+=cnt;

glClear(GL_COLOR_BUFFER_BIT);
drawCircle(circleRadius);

glutSwapBuffers();
}



static void Reshape(int w, int h)
{
glClearColor (0.0, 0.0, 0.0, 1.0);
glClear(GL_COLOR_BUFFER_BIT);

Width = w; Height = h;

glViewport (0, 0, Width, Height);

glMatrixMode (GL_PROJECTION);
glLoadIdentity ();
glOrtho(-Width/2, Width/2, -Height/2, Height/2, -1.0, 1.0);
}
```

```
static void Key(unsigned char key, int x, int y)
{
switch (key) {
case ESC:
exit(0);
case SPACE:
glutIdleFunc(NULL); display();
break;
default:
glutIdleFunc(display);
}
}


int main(int argc, char **argv)
{
glutInit(&argc, argv);
glutInitDisplayMode(GLUT_DOUBLE);
glutInitWindowSize(Width, Height);
glutCreateWindow("Example 1.5.circle.c: press SPACE & another key");

glutKeyboardFunc(Key);
glutReshapeFunc(Reshape);
glutDisplayFunc(display);
glutIdleFunc(display);

glutMainLoop();
}
```


Draw - Microsoft Visual Studio
File Edit View Project Build Debug Tools Test Window Community Help
Debug
Win32
drawcircle.cpp*
Start Page
(Global Scope)
/* animation and circle by subdivision */
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#include <stdlib.h>
#include <math.h>
#include <GL/glut.h>
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int Height=400, Width=400;
int depth=0, circleRadius=2, cnt=1;
static float vdata[4][3] = {
{1.0, 0.0, 0.0}, {0.0, 1.0, 0.0},
{-1.0, 0.0, 0.0}, {0.0, -1.0, 0.0}
};
void normalize(float v[3]) {
Solution Explorer - Solution '...
Solution 'Draw' (1 project)
Draw
Header Files
Resource Files
Source Files
drawcircle.cpp
Solution Explorer
Class View
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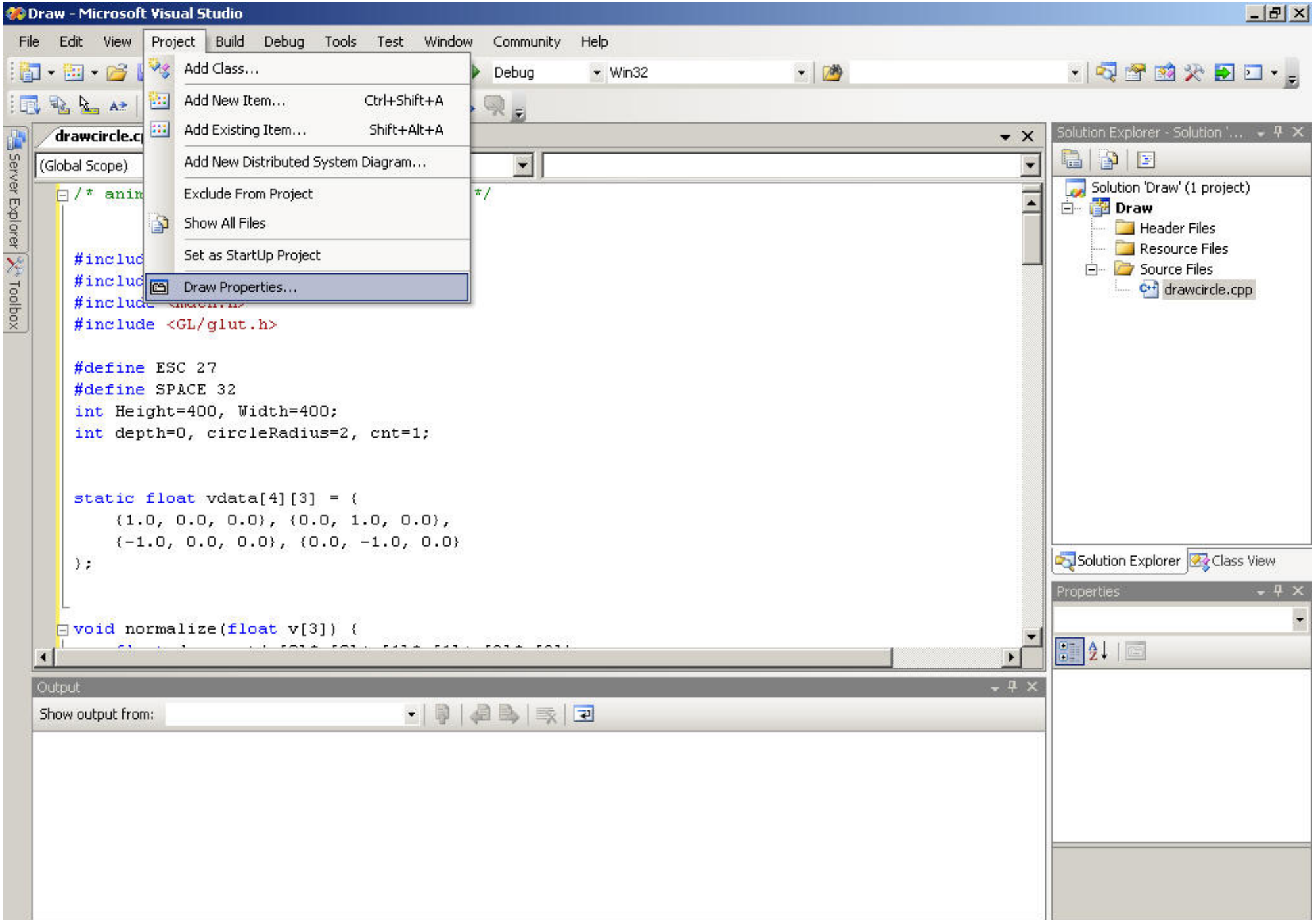
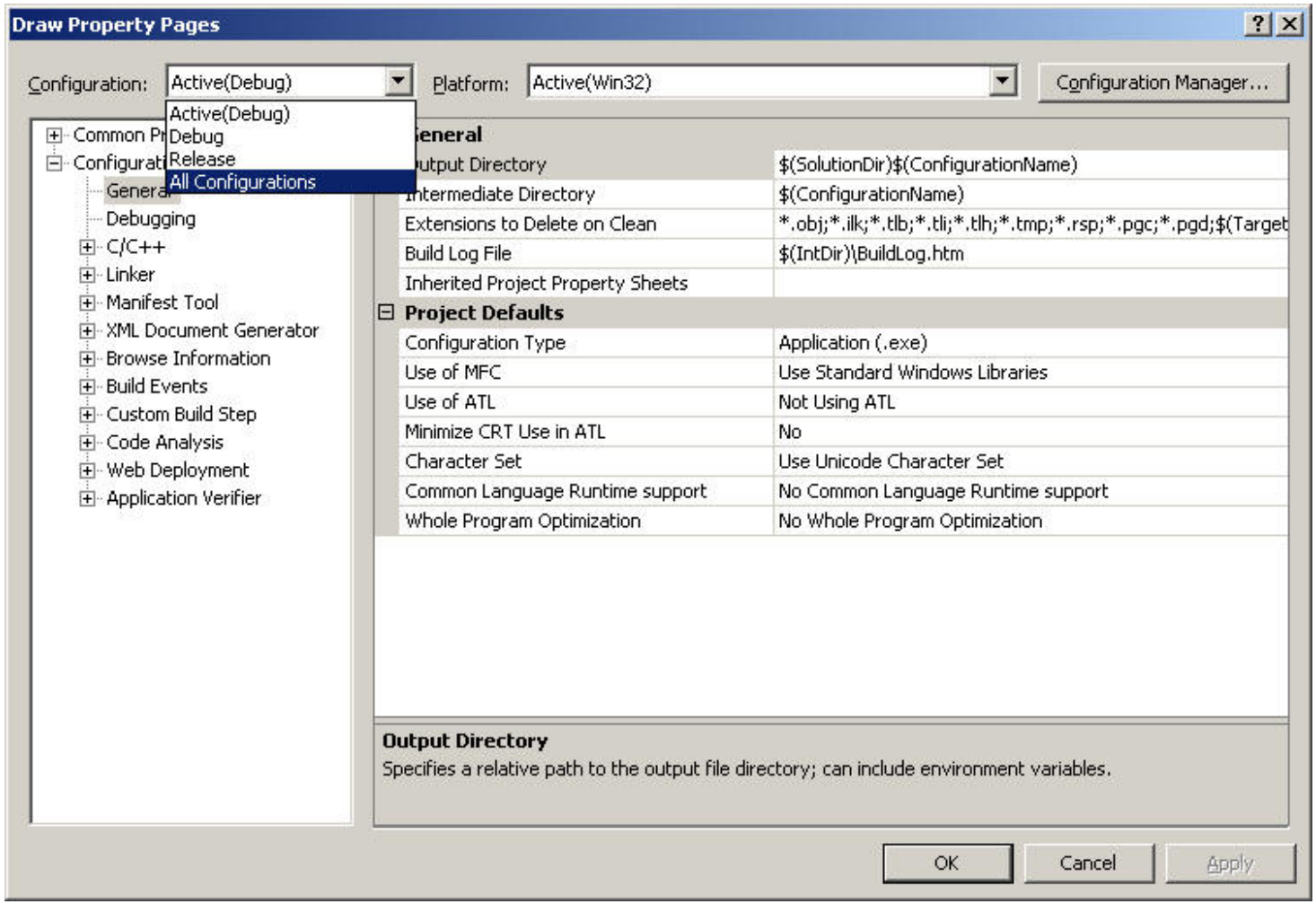
Step 3: Modify the project properties

1. Use Visual Studio's menu Project options (Project --> Draw Properties)



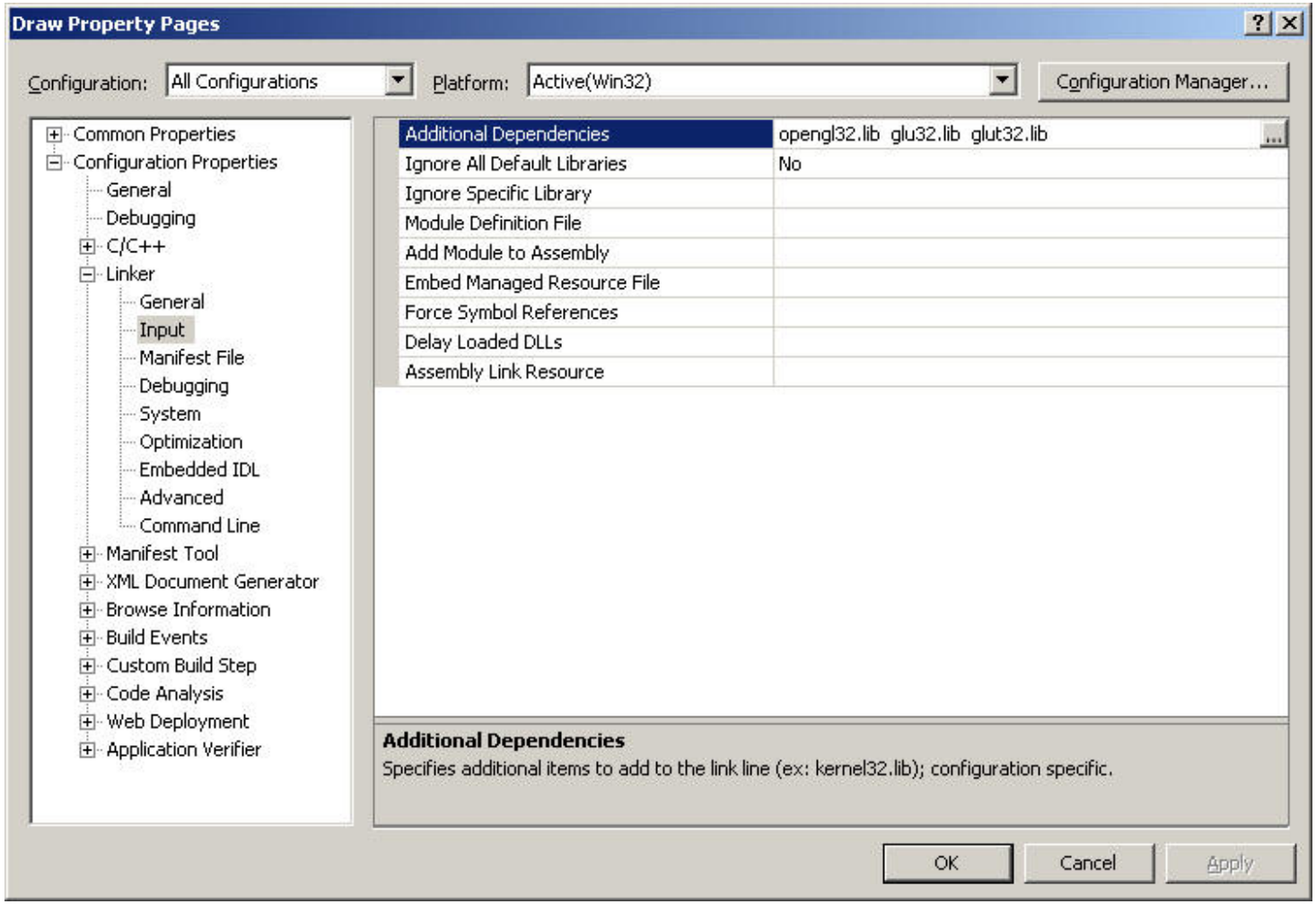
2. The Draw Property Page dialog will open. Once it appears, do the following:

a. **Select the** Configuration **combo box**, **select** All Configuration



b. **In the left pane, select the** linker **subtree and then click the** Input **option. Add the following code to the** Additional Dependencies **text in the right pane.**

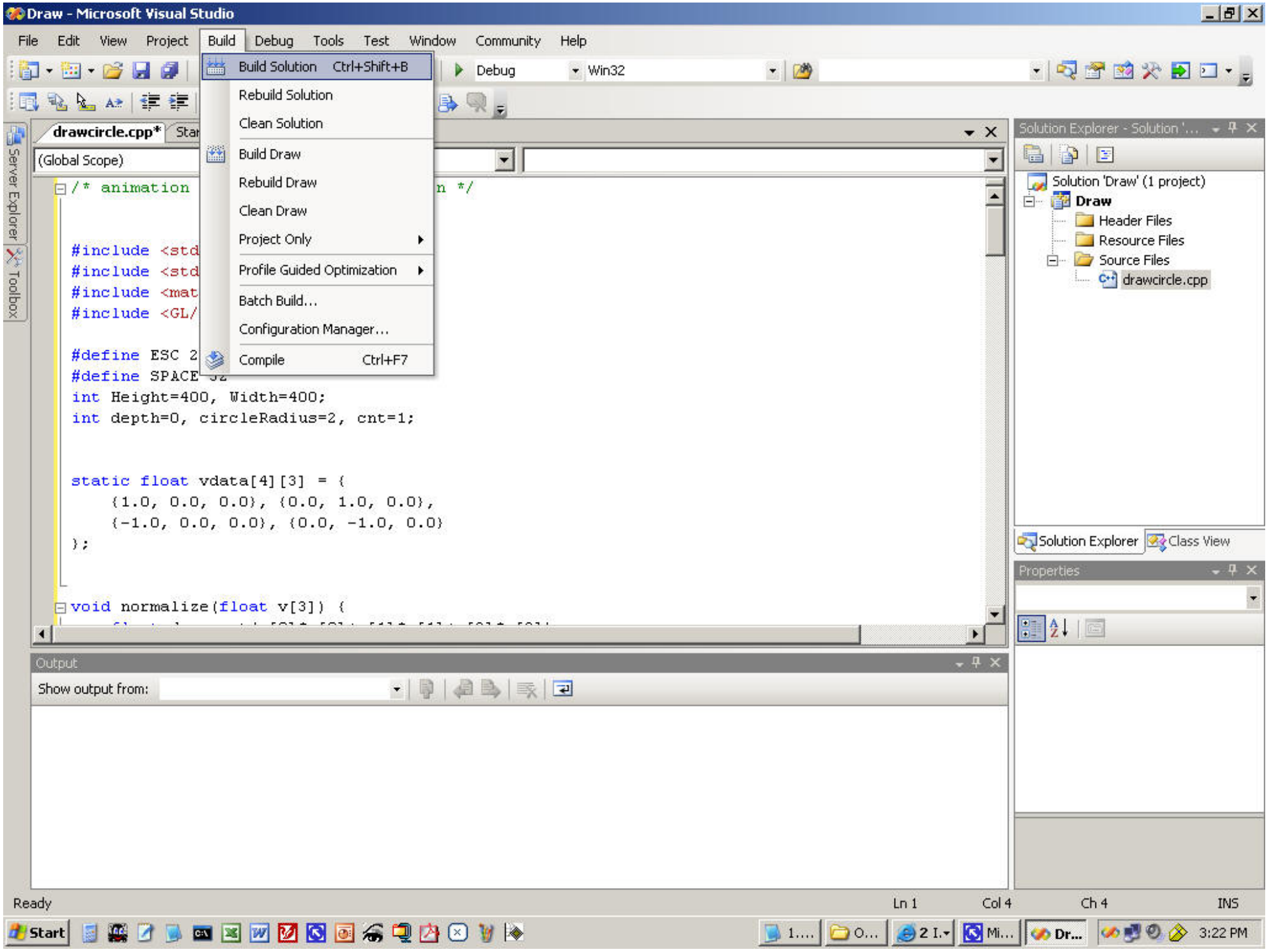
Copy and Paste: opengl32.lib glu32.lib glut32.lib



Now Visual Studio knows where to find GLUT. Click OK **button**

Step 4: Compile and Run the project

a. Compile
From the Visual Studio's menu Build option (Build ---> Build Solution)


Draw - Microsoft Visual Studio
File Edit View Project Build Debug Tools Test Window Community Help
Build Solution Ctrl+Shift+B
Rebuild Solution
Clean Solution
Build Draw
Rebuild Draw
Clean Draw
Project Only
Profile Guided Optimization
Batch Build...
Configuration Manager...
Compile Ctrl+F7
Debug
Win32
drawcircle.cpp*
(Global Scope)
/* animation
#include <std
#include <std
#include <mat
#include <GL/
#define ESC 2
#define SPACE 32
int Height=400, Width=400;
int depth=0, circleRadius=2, cnt=1;
static float vdata[4][3] = {
{1.0, 0.0, 0.0}, {0.0, 1.0, 0.0},
{-1.0, 0.0, 0.0}, {0.0, -1.0, 0.0}
};
void normalize(float v[3]) {
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drawcircle.cpp
Solution Explorer
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Output
Show output from:
Server Explorer
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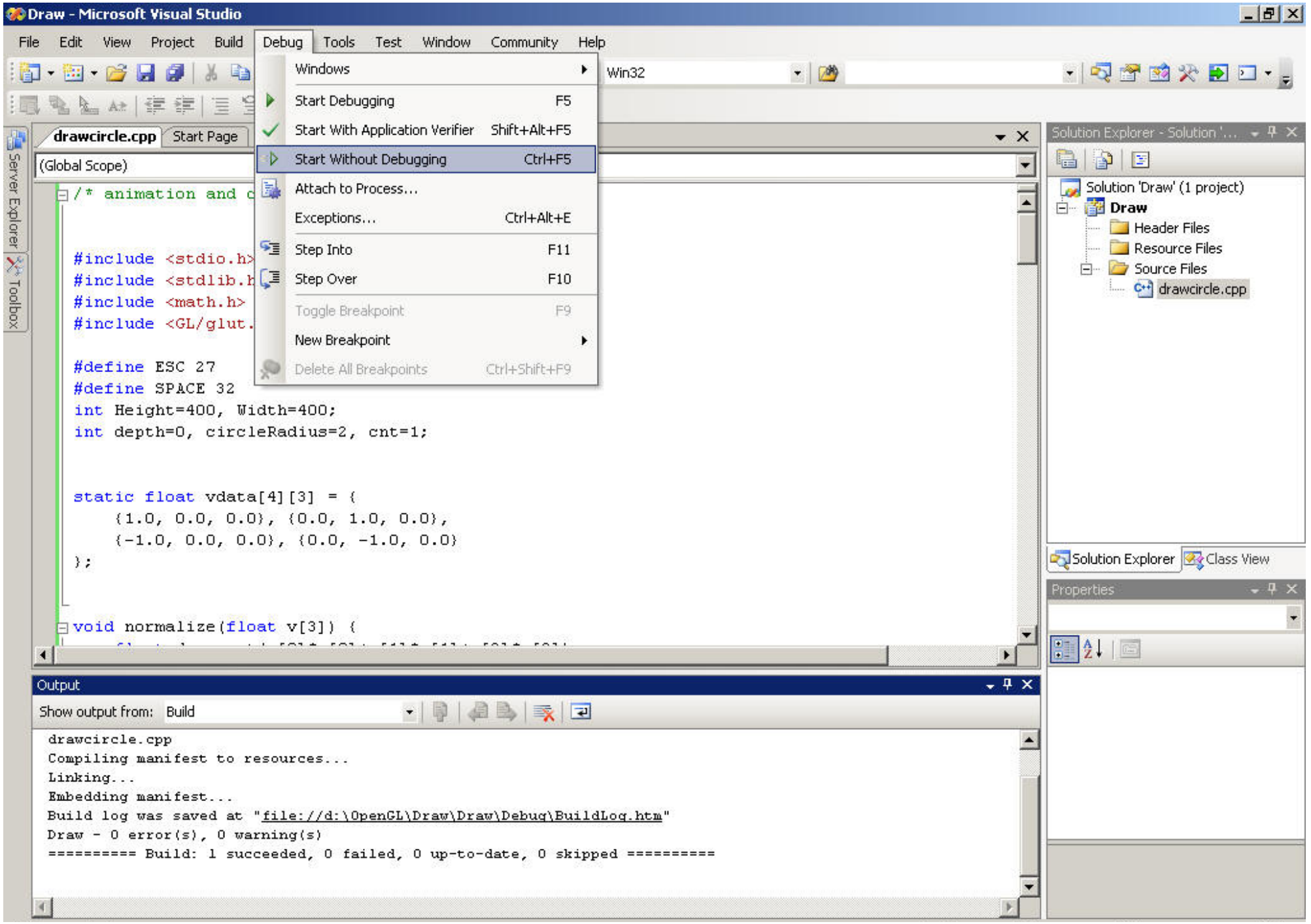
Ready
Ln 1
Col 4
Ch 4
INS
Start
3:22 PM

b. Execute the program

From the Visual Studio's menu Debug **option** (Debug ---> Start Without Debugging)



THAT'S ALL FOLKS. GOOD LUCK !