

# **CVE User's Guide**

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For CVE Version 0.5

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# Introduction

Welcome to CVE. CVE stands for **Collaborative Virtual Environment**, a software program created by New Mexico State University and the University of Idaho that aims to help interested students everywhere gain more experience in the area of computer science. CVE is a virtual world in which students can collaborate on computer science projects with other user of the virtual world. In addition, CVE is also used for educational purposes so that students can create computer science projects with the help of an instructor.

## How to use this manual

This manual is comprised of 13 chapters. Each chapter is divided into different sections treating a particular aspect of CVE.

## About Sections

Each section is indicated by a dark-blue font heading as you see above. Each chapter starts with a general overview of the chapter that explains what the chapter is about. The section of the chapter is followed by a bullet list explaining the main steps and/or the main components that will be discussed in the chapter. This is followed by the items outlined in the overview.

## About Instructions

**Each instruction** is indicated by a light-blue text. Some instructions in this manual require that you follow a set order. In this case these steps are numbered.

An example of a step in an instruction:

### 1. Click on the Windows CVE Logo on your desktop to start CVE

Below each step, *background information* will be offered in a regular black font. While you are encouraged to read through the entire manual, it is possible to go through certain steps quickly by reading the highlighted light-blue text.

## About NOTE: Boxes

At times important information will be offered of which an example is given below:

### **NOTE:**

Important information will be offered in this box. It is important that you read this information since it involves subsequent steps.

These boxes are there to remind you off important information as well as serve as visual reminders for when you revisit that section.

## About Quicklist sections

Each Chapter ends with a Quicklist which gives a quick overview of the keys used for specific purposes. For those that do not want to revisit the information in the chapter, but simply want to remind themselves of particular key combination used for specific tasks, these quicklists are a valuable resource in allowing you to revisit some of the specific concepts and actions you want to remember in the chapter.

## Questions, Suggestions, Comments?

If you have any questions, suggestions that would make this a better manual, please email the authors at: [gustav@nmsu.edu](mailto:gustav@nmsu.edu) and [jeffery@cs.uidaho.edu](mailto:jeffery@cs.uidaho.edu).

## **Overview of this User Guide**

In order to use CVE, you'll first need to familiarize yourself with this user guide to get a sense of all of the different things you can do in the virtual world. This guide is set up in the following manner:

- **Chapter 1:** Creating a New Account  
(Registering as a New User, Creating a New Avatar & Avatar creation options)
- **Chapter 2:** Logging in  
(How to log in to CVE after You've Registered and created Your Avatar)
- **Chapter 3:** Using CVE  
(What various areas of the CVE interface will do)
- **Chapter 4:** Exploring the 3D environment  
(How to navigate your avatar through the environment)
- **Chapter 5:** Interacting with Other Users  
(How to interact and communicate in various ways with other users)
- **Chapter 6:** Using Text Chat  
(How to use text chat to communicate with other)
- **Chapter 7:** Using the Voice Chat To Talk To Other Users  
(How to use audio conversation tools in order to communicate with others)
- **Chapter 8:** Using the File Menu Bar to Create Projects  
(How to use the File Menu Bar for various options)
- **Chapter 9:** Creating a Project Using the Integrated Development Environment  
(How to create programs using the IDE)
- **Chapter 10:** Creating Unicon Projects in CVE  
(How to create, run and debug Unicon programs)
- **Chapter 11:** Creating Java Projects in CVE  
(How to create, run and debug Java programs)
- **Chapter 12:** Creating C/C++ Projects in CVE  
(How to create, run and debug C/C++ programs)
- **Chapter 13:** Using the IDE to Share Documents With Others  
(How to use the IDE sharing function to collaborate on programs)

Knowing all of these elements will make your experience more successful as you work and interact with others in CVE.

## **Chapter 1: Creating a New Account**

This chapter details how to open CVE and create a New account in CVE. In addition, since each new account also means that you have to create your own avatar, this chapter will also describe the process of how to create your own avatar. An avatar is a representation of yourself that will appear to others in the CVE environment. It is important that you spend some time creating your avatar, since you will be known through your avatar in CVE.

The following things will be discussed in this chapter:

- **Step 1: Registering as a new User**
- **Step 2: Creating a New Avatar**
- **Avatar Creation Options**

### **NOTE:**

Since CVE requires each new user to create a new avatar, these steps are mentioned in the order the user will have to do them.

To ensure quick access to those people familiar with the process of creating an avatar, the steps to create a new avatar are given separately from background information regarding this process.

Users wanting to have more background information about avatar creation options are advised to read the **Avatar Creation Options** below first before commencing with individual steps below.

### **Registering as a New User**

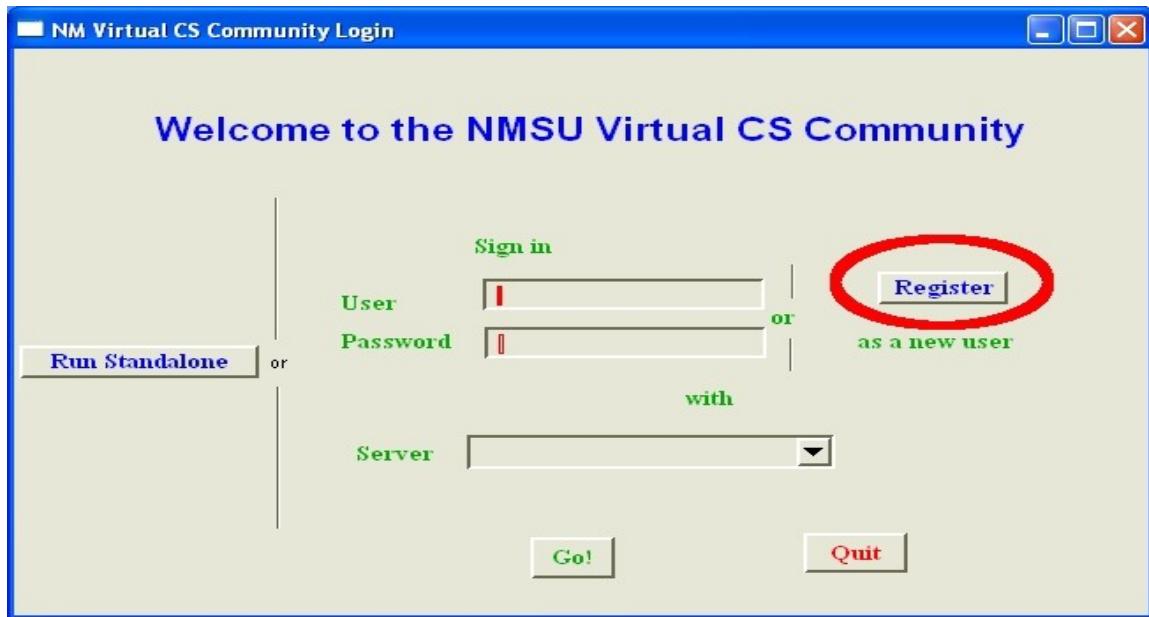
In order to access CVE, you'll need to create a Username and Password. The following steps describe how you can create an account that will let you log in to CVE.

#### **1. Click on the Windows CVE Logo on your desktop to start CVE**



During its development, the CVE software has been codenamed Unicorn (after an artificial planet from the Transformers television series and toys), NSH (for New Science Hall, at NMSU), and VIEW and you will still see those names in various places in the software and articles written about the project.

## 2. Click on “REGISTER as a new user”



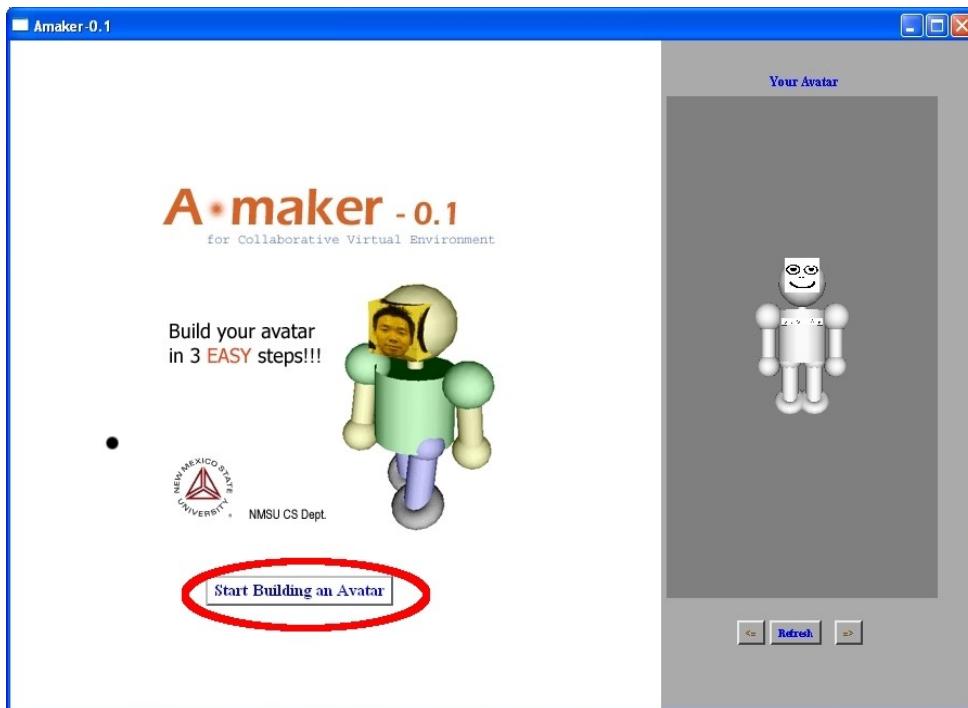
When you register as a new user, you will be taken to a screen that will let you create your own avatar. Each new user will need to create a new avatar as well. Follow the instructions for Creating a New Avatar in CVE as described below.

## Creating a New Avatar

There are three steps to the process of Creating a New Avatar:

- In the **first step**, you'll be asked to give some personal information such as your first and last name, and by what name you want to be identified in CVE, as well as your password.
- In the **second step**, you'll define your body type, head shape, and gender. You can also upload an image of your own face so that others can see who you are. By default, your avatar has a smiley face. In this step you'll also configure the body, shirt, pant and shoe color of your avatar.
- In the **third step**, you will be given a review of your answers in STEP 1 and 2, and will be allowed to make any corrections before creating your final avatar.

### 1. Click on the “Start Building an Avatar” button.

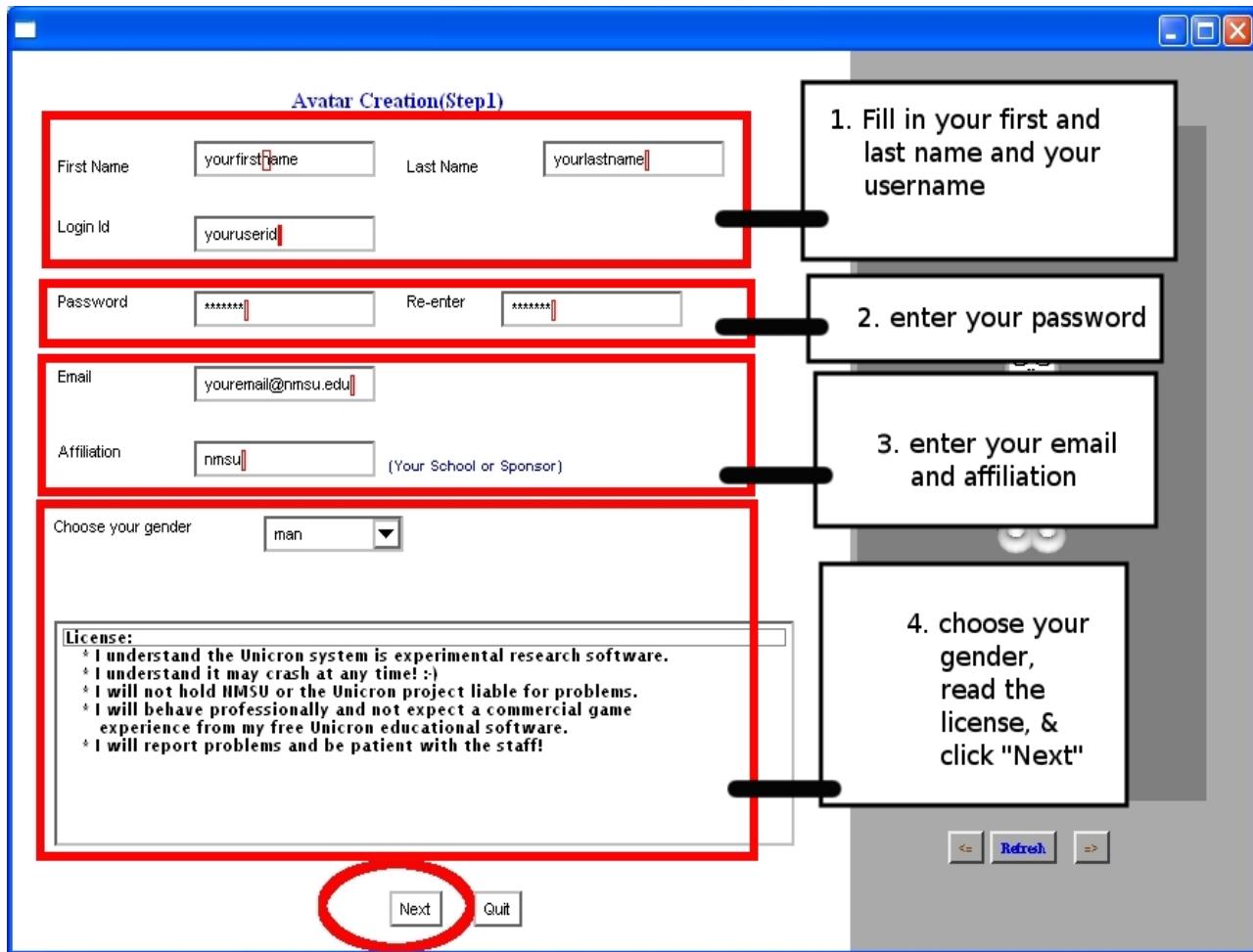


This will take you to a screen that will give you options to create your avatar.

### 2. Fill in your personal information and Click “Next”

- Fill in your **first** and **last name** in the upper two text fields, as well as the **login id** (your username in CVE) below.
- Fill in your **password** twice to ensure (once in the Password field and once in the Re-

enter field) to confirm that this is the correct password you want to use.

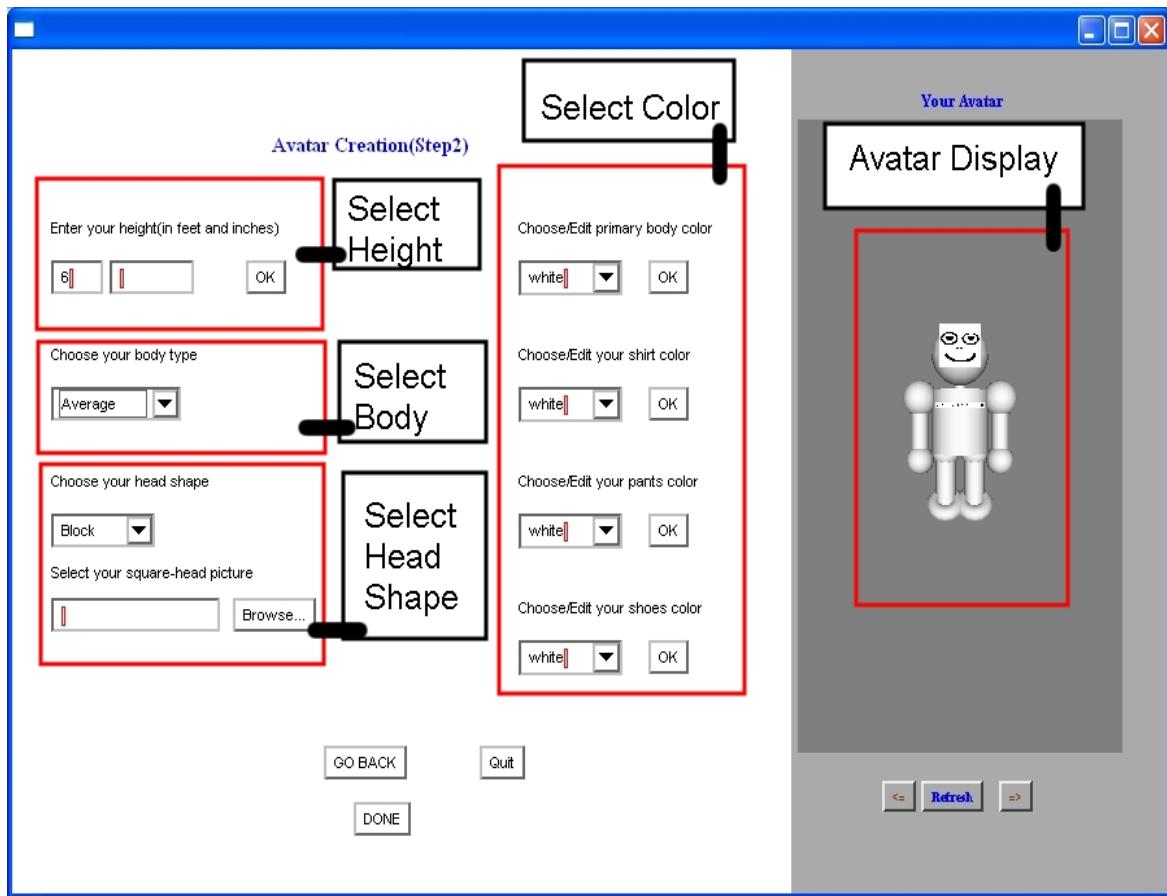


- Fill in your **email address** and your **affiliation** (what school you are attending or what organization is sponsoring you), as well as your **gender**. When you have filled in all of this information and have read the License agreement, click "**Next**" to proceed to the Second Step of the Avatar Creation process, in which you'll define how your avatar looks.

### **3. Create your Avatar by selecting the height, body, color, and head shape for your avatar**

#### **Note:**

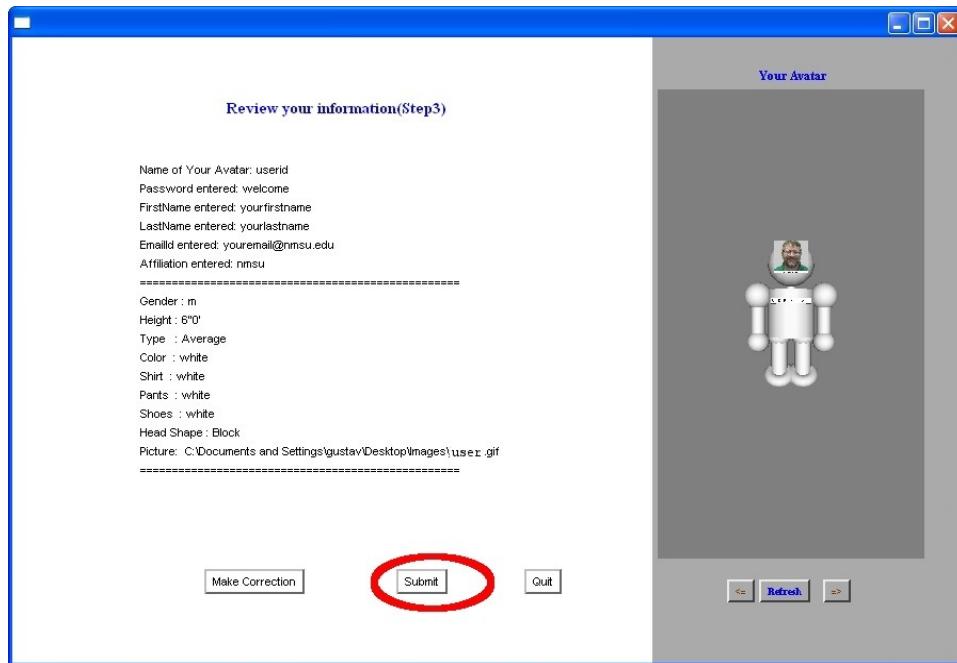
For a more in-depth explanation of your options in creating an avatar, read the section below entitled ***Avatar Creation Options***.



**4. Press “Done” button after completing STEPS 1-2 to have CVE create your personal avatar with the settings you just specified**

**5. After reviewing your information in Step 3, press “Submit” to create your avatar or “Make correction” to change your avatar before submitting it.**

You will see a review of what you just specified, as well as a current view of your avatar in the right-hand side of the window. The below image, for instance, will create a white-colored avatar with the user.gif image for a blockhead shaped avatar.



**That's it! You will now be taken automatically into CVE with your new avatar.**

## Avatar creation options

In the preceding steps you are asked to create your avatar. An avatar is the representation of you so that other users can recognize you when you are in CVE. CVE lets you determine the following things about your avatar:

- **height** of your avatar
- **body type** of your avatar
- **color of your avatar's body, shirt, pants and shoes**
- **head shape** of your avatar
- **image** that you can use for your avatar's face.

At all times in this process, you can see what your avatar looks like in the right hand side of the window, so any changes you make on the left will be reflected in the way your avatar looks on the right.

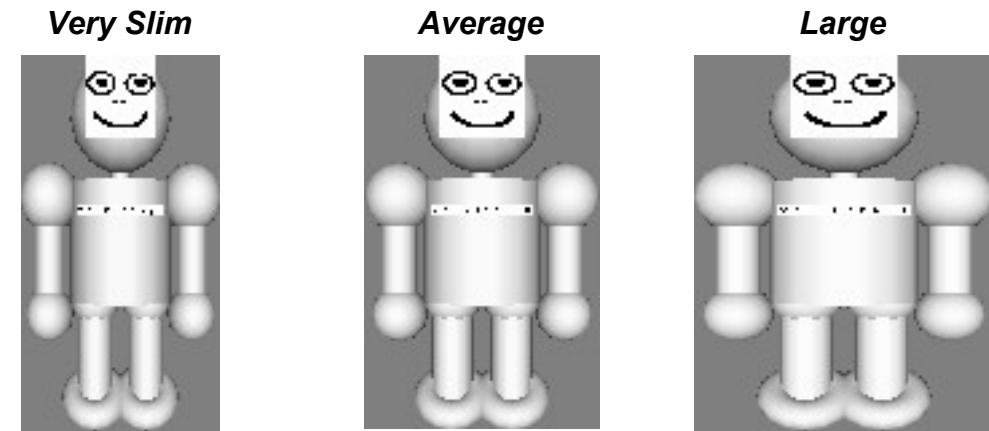
It is important to spend some time creating an avatar that you like, because others will recognize you only through your avatar. As they say, first impressions are important! Below are some examples of the various choices that you have in creating your avatar.

## ***Specifying the Height of your Avatar***

You'll need to give the height of your avatar. This is done in feet and inches. Make sure to fill out both feet and inches. An average height is about 6 feet, so you would fill out 6 feet a 0 inches.

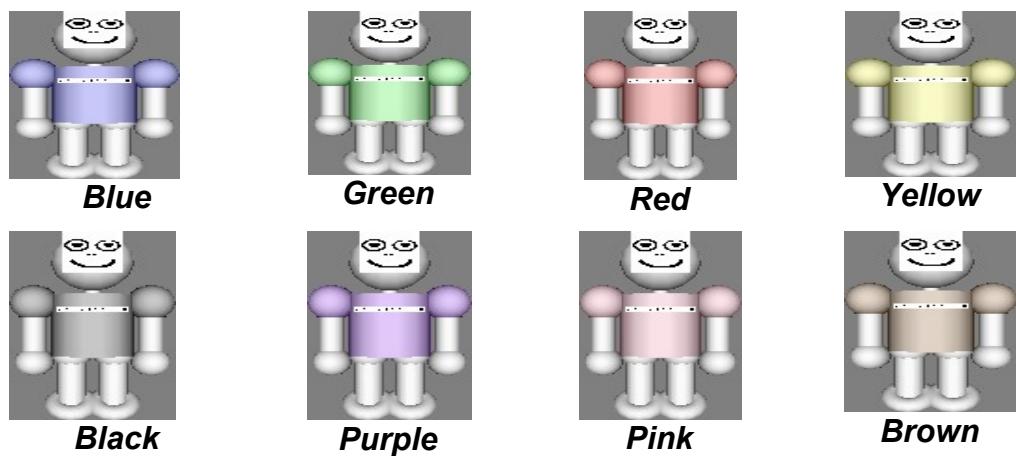
## ***Choosing a Body Type for your avatar***

There are a variety of sizes for your avatar: Very slim, Moderately Slim, Average, Built, Big and Large. Below are three examples that display the difference between the smallest and the largest avatar size relative to each other. For instance, if you want your avatar to have an average size, you would select “**Average**” in the drop-box. If you want a large avatar, select “**Large**”.



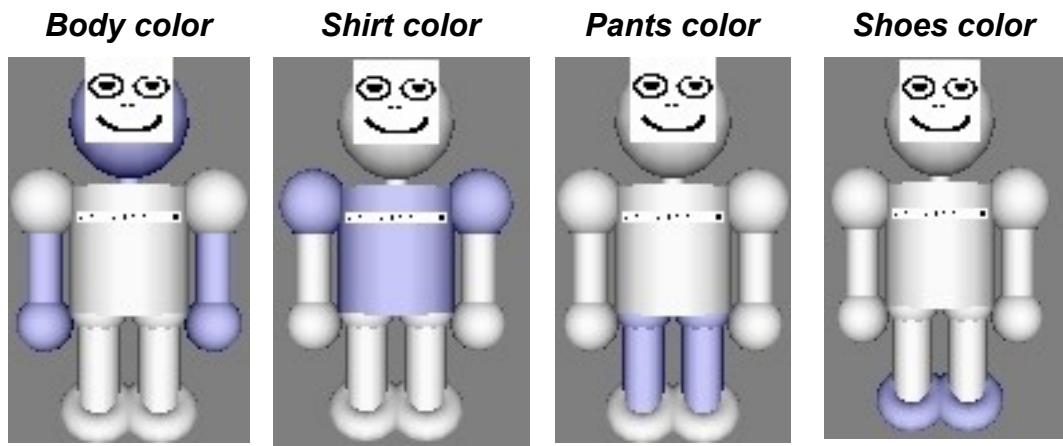
## ***Different Avatar Colors***

Next to the standard white color, you can choose between blue, green, red, yellow, black, purple, pink and brown colors for your avatar



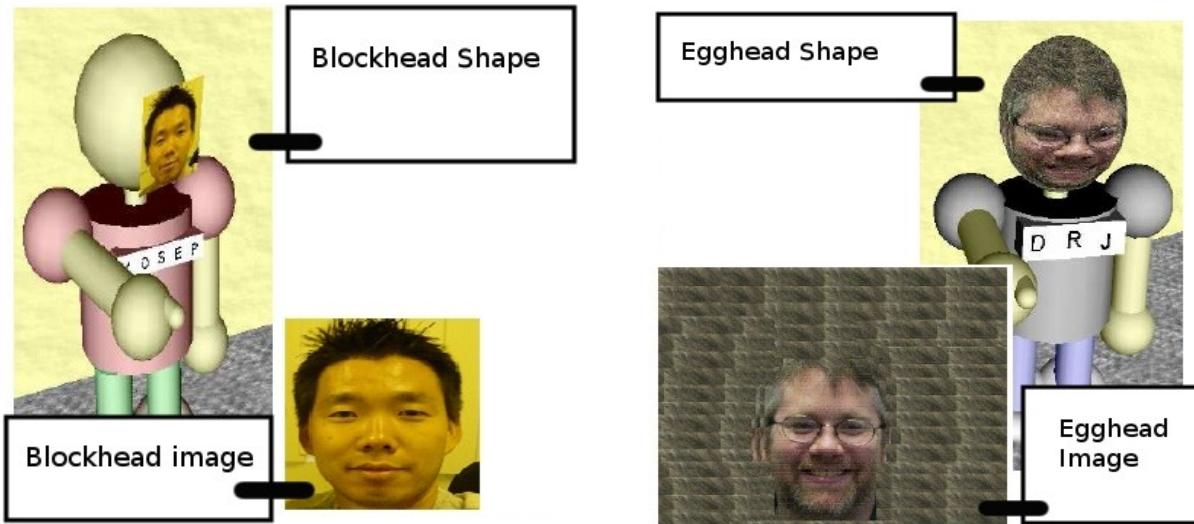
## *Configuring the color for the body, shirt, pants and shoes of your avatar*

Below is an example of the different options that you have in configuring different colors for the different body parts of your avatar.



## *Choosing the Headshape of the Avatar*

You can choose between two different headshapes for your avatar: a **Blockhead** or an **Egghead**. The Blockhead will place a 128x128 (or 256x256) GIF image in front of your avatar, whereas the Egghead will shape a GIF image around the head. The Egghead requires that you create a specific image that will fit around the Egghead, whereas the Blockhead can be any 128x128 (or 256x256) image of you.



## *Creating the Image for your avatar*

The **Blockhead** image can be easily created from a 128x128 (or 256x256) image; The **Egghead** image requires a bit more work, but will give your avatar a more realistic feel. If you want to get started right away, the blockhead image is the easiest option, since it will only require a simple image, whereas the Egghead image will need to be created in an image editor such as Windows Paint, the GIMP, or Adobe Photoshop. In the Egghead you want your face to occupy the lower two-thirds of the middle third of the image. Most of the rest should be hair, but you could experiment with putting on ears, and so forth.

## *Choosing a Blockhead shape*

In order to choose the Blockhead shape follow the following steps: In Step 2 of the Avatar Creation process, select “**Block**” in the Head shape field. In the Select your square-head picture field, select “**Browse**” and locate the image you would like to use for your avatar’s face. Click on “Okay” to select the image.

This will put the image in front of your avatar’s face. If want to cancel selecting an image, press “Cancel” and select another image.

## *Choosing the Egghead shape*

In order to choose the Egghead shape, select “**Egg**” in Head shape field. If you are using an Egghead image, you’ll need to create one image that depicts your head as well as the back of your head. If you have already created an egghead shape to be used, select “**Browse**” and select the image that you would like to use. Select the image, then click “**Okay**”.

## **Chapter 2: Logging In**

This chapter details how to log into CVE. After you have created your avatar, you can log in at any time using the userid and password that you specified when you were creating your avatar.

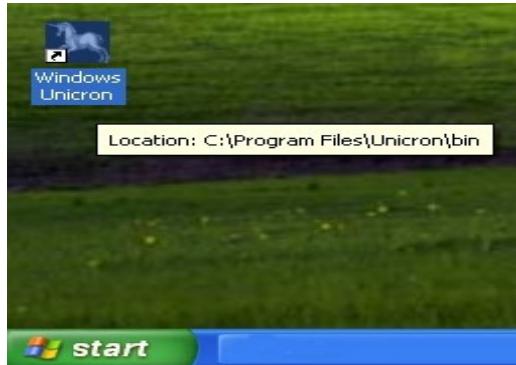
**NOTE:**

If you do not yet have a User name and Password, click on “**REGISTER as a new user**” and follow the instructions for Creating a New Account/Avatar in CVE. If you have already created one, and forgotten your password and email, please **contact the CVE system administrator at jeffery@cs.uidaho.edu**

### **Logging in to CVE**

In order to access CVE, you'll need to have create an account with CVE. These steps are described in the next chapter **Creating a New Account/Avatar in CVE**. The following steps describe how you log in to CVE.

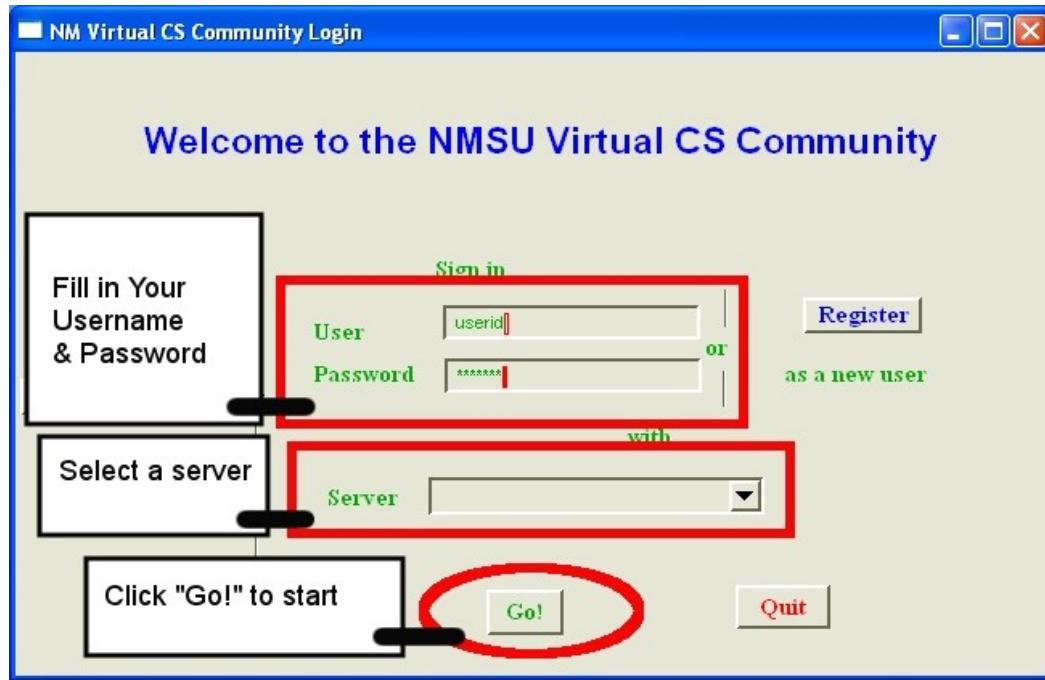
**1. Click on the Windows CVE Logo to start CVE**



**2. Fill in your User name and Password and click “Go”**

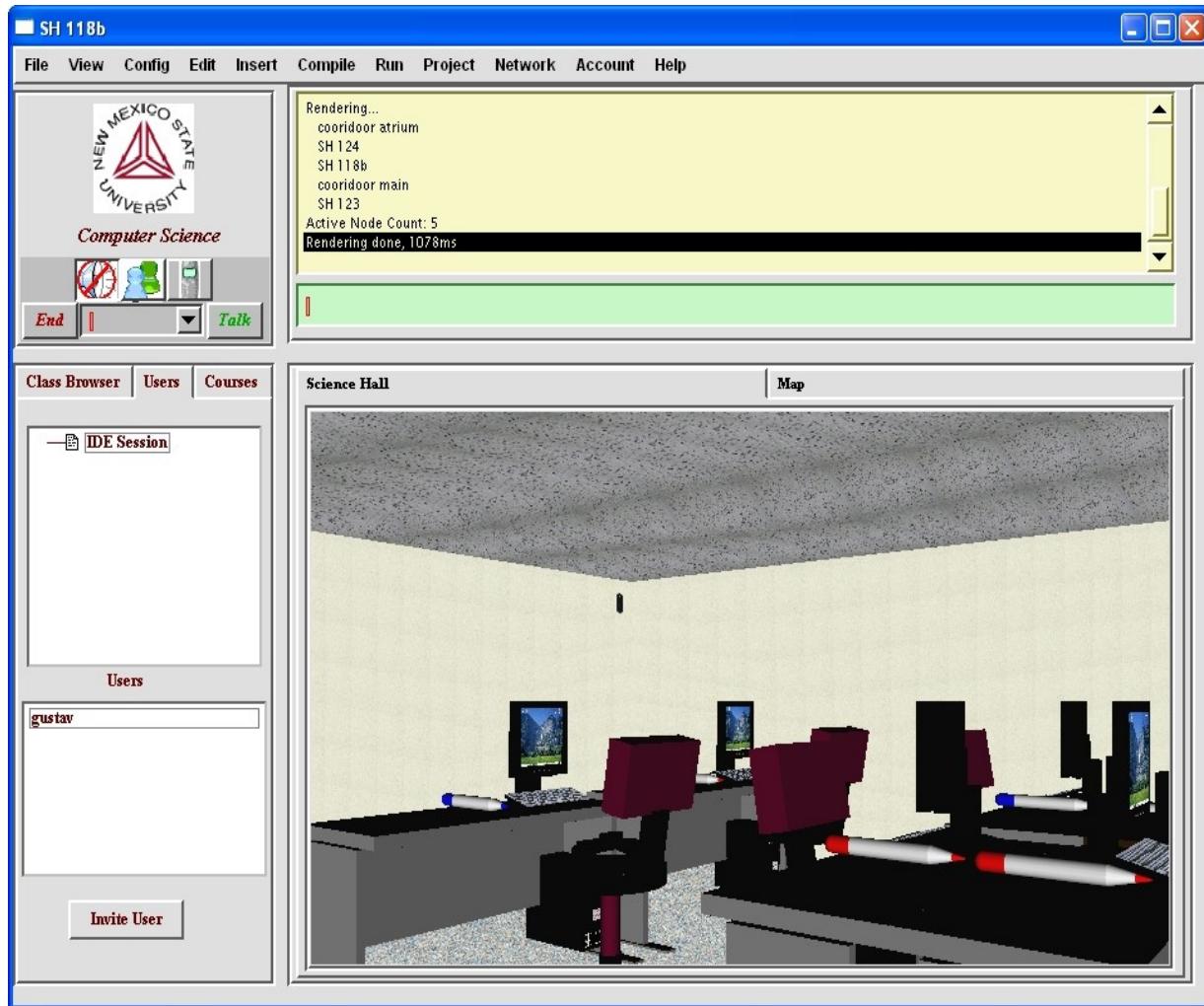
After clicking on CVE, the CVE Login screen will appear, and you will need to enter your **User name** and **Password** in order to access CVE.

By default, you do not need to select a server to be able to enter CVE. CVE automatically selects a server for you. However, you can choose a different server by clicking on the dropdown and selecting a specific server. In case you are not able to log in to CVE, and if you are wondering which server to select, select `virtual.cs.uidaho.edu`.



If you have successfully logged in, you will see the CVE interface.

Depending on where your avatar is located, you might see something like the below image:



Congratulations, you have now successfully logged into CVE!

## Exiting CVE

At any time, you can also exit CVE by clicking “**File > Exit**”. Make sure to save your files first by clicking “**File > Save**” or “**File > Save As**”

**To Exit CVE at any time simply click “File > Exit”**

Action	File Menu Bar Item
Exit CVE	<b>File &gt; exit</b>

Make sure to familiarize yourself with the various tasks you can do in CVE by reading the following chapters.

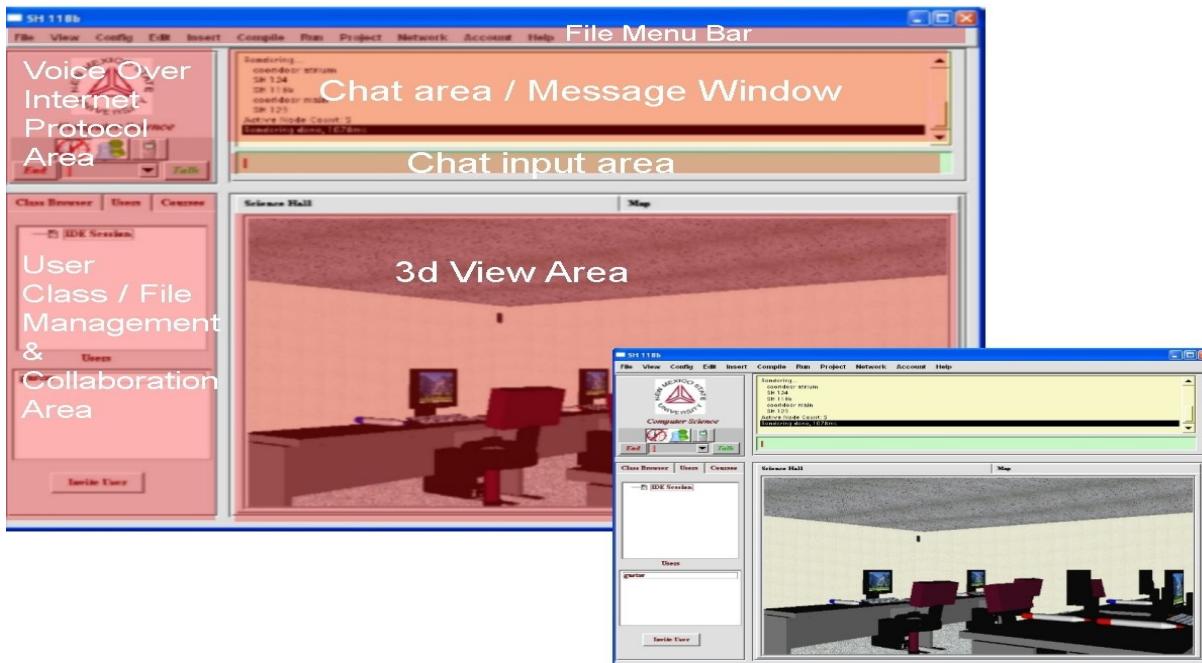
## Chapter 3: Using CVE

CVE is designed to let you utilize a variety of different options to collaborate with others. Knowing these functions will allow you to make use of these collaborative functions, which will enhance your learning experience as you interact and work with others in CVE. This chapter offers you quick descriptions of the main elements of CVE. Rather than feeling like you should remember all of this information, you should see (and read) this chapter as a first-time opportunity to get to know how to use CVE in general, with more in-depth and detailed instructions offered in individual chapters after this chapter.

CVE is equipped with the following capabilities:

- **A 3d environment that can be navigated**
- **Text chat**
- **User avatar movement and user-to-user avatar interaction**
- **Voice chat using Voice-Over-Internet Protocols (VOIP) area**
- **A File Menu Bar that lets you create and open Unix/C/C++ and Java projects**
- **Collaborative programming and program sharing the Idaho Collaborative IDE (ICI)**
- **File and class management**

All of these capabilities are represented in the interface in specific areas. Here is an overview:



For your convenience, above is an example of what you might see after you've logged in to CVE, as well as what function is represented in each area. Each of these areas will be

explained separately below, with more in-depth instructions in individual chapters following this chapter.

## Using the 3D Environment

This part of CVE serves a variety of different purposes:

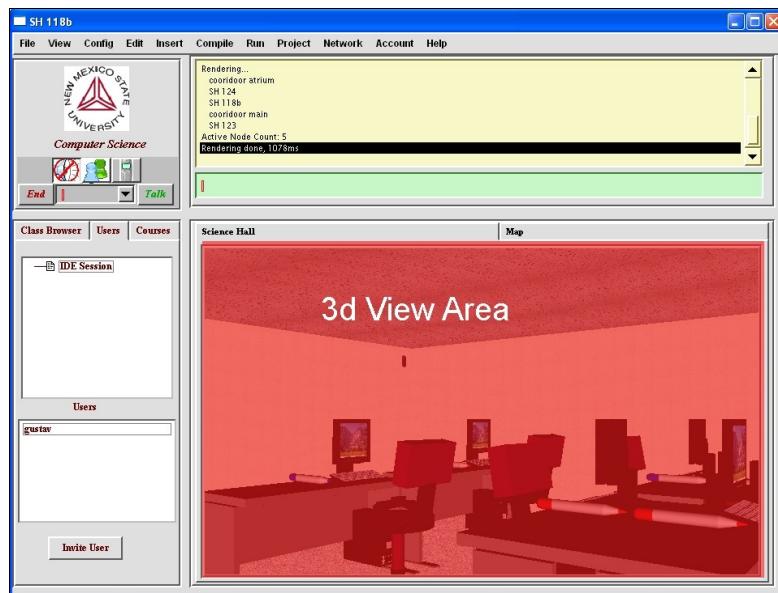
- (1) By clicking on the **Janssen Engineering Building Tab** or **Science Hall Tab**, you can navigate the virtual worlds at the University of Idaho or NMSU, whichever one you logged in to.
- (2) By clicking on the **Map Tab**, you see where you are on a map

### **NOTE:**

By default, the **Science Hall** and **Map Tab** are **only displayed** in this part of your screen.

When utilizing other functions, such as **opening a new file** or **starting a voice chat**, other tabs will be displayed in this area when these functions are used.

In addition to functioning as a navigation area, there are also multiple other functions that can be accessed by clicking on the **Tabs** at the top of the 3d view area, allowing you to switch between for example, the 3d navigation or watching a map where you currently are.



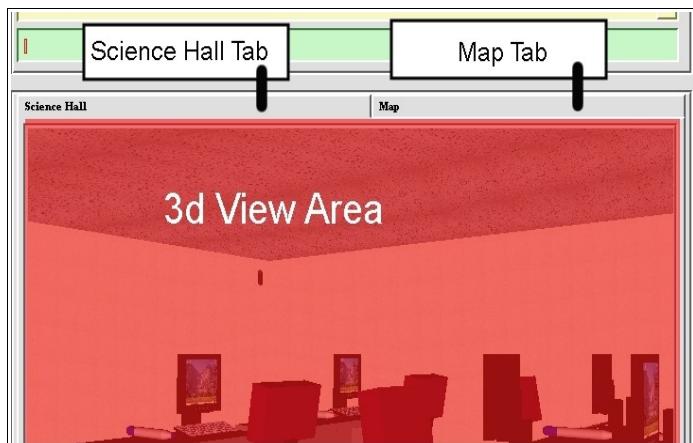
### **Science Hall Tab**

Using the **↑ Up**, **↓ Down**, **← Left** and **→ Right** arrow keys will let you navigate throughout the virtual representation of the Science Hall building at New Mexico State

University (or Janssen Engineering Building at the University of Idaho). In navigating through the virtual environment, you'll meet various other users, which will lead you to get to know these users and collaborate with some of the people that you meet.

## ***Map Tab***

The ***Map Tab*** displays a 2D, overhead view of where you are in your floor of the virtual environment, allowing you to see where other users are so that you may interact with them.



## ***File Tab***

When you open a new or an existing project or file using the ***File Menu Bar***, a new ***File Tab*** will be opened above the 3D view area, allowing you to program your file using the 3D view area.

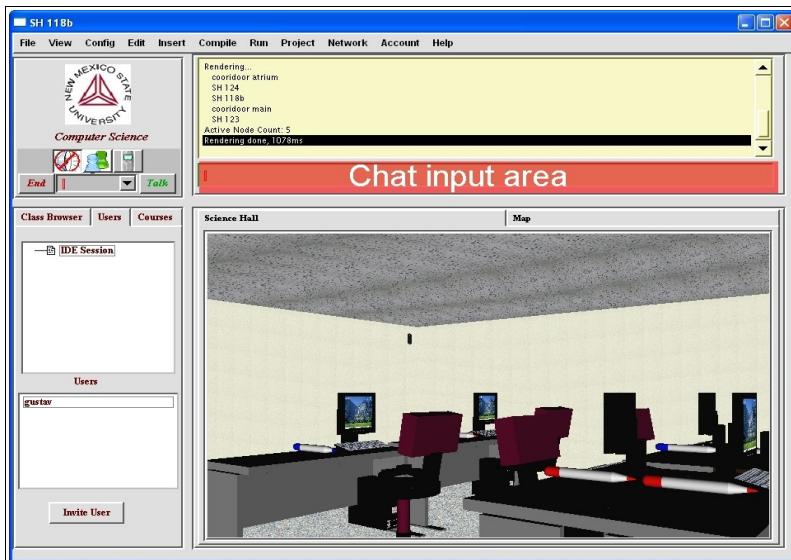
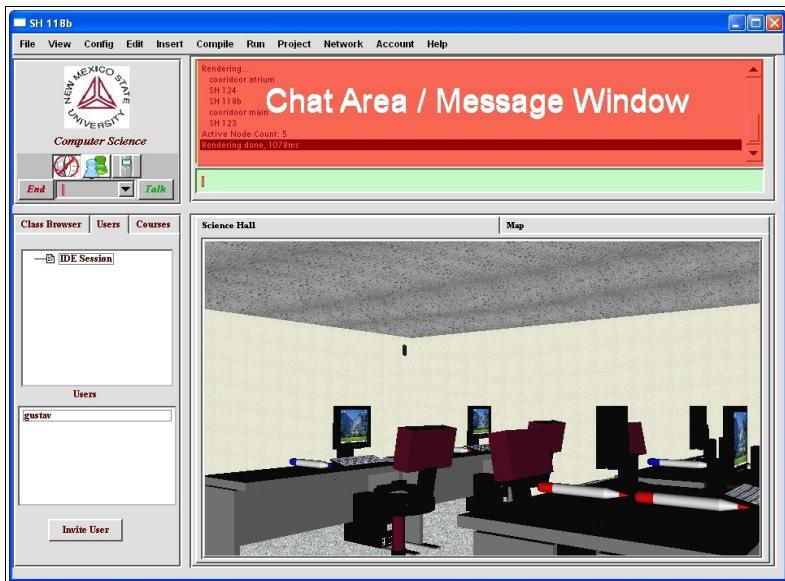
## ***Voice Chat Tab***

When you engage in voice chat using the virtual cell phone, a ***Voice Tab*** will be opened and a new ***virtual cell phone screen organizer*** will be displayed in the 3D view area. You can hide the area or turn off all calls to resume navigating the 3D view area.

## **Using the Text Chat Function**

You can text chat with multiple users as well as a single user in CVE by using the chat area. The chat interface contains two elements:

- (1) a ***chat area /message window*** that will display chat messages from others, as well as general program messages
- (2) a ***chat input area*** where you can type messages to others

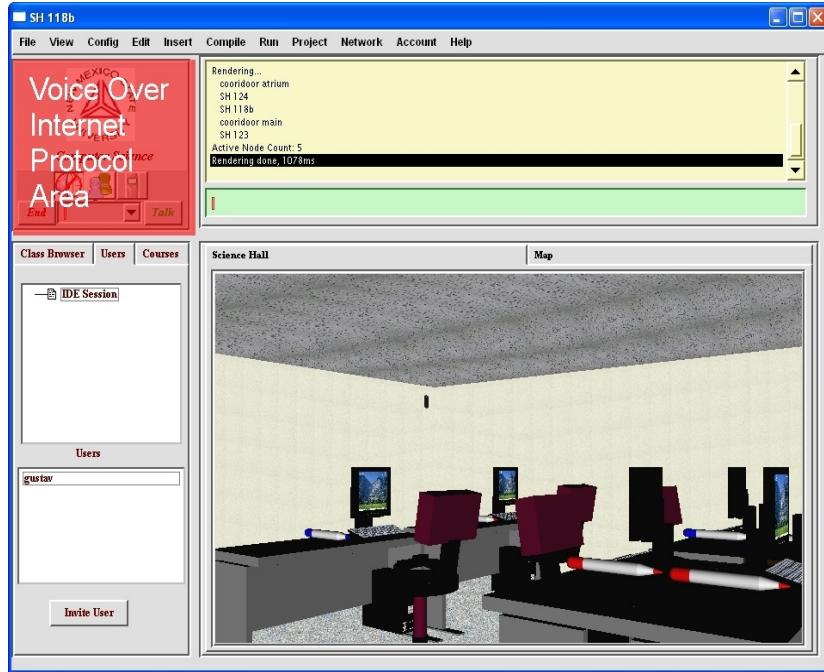


CVE uses chat commands to distinguish between messages intended for a single user and multiple users. For this reason, CVE uses different chat commands for chat messages intended for single and multiple users.

## Using Voice Chat with the VOIP Function

The Voice Over Internet Protocol (VOIP) function lets users voice chat with other users. Each user will need to have working speakers and a microphone in order to use voice chat. Just like a phone, it is possible to talk one-on-one, or to have conference calls with multiple users.

talking to each.



The Voice Chat Area has four different functions:

- (1) A **Turn Off Function**
- (2) A **Quick Phone Call function** to quickly connect privately with other online users
- (3) A **Public Conference Call Function** to talk to whoever is present in the same room as you
- (4) A **Virtual Cell Phone Function** with the ability to have *private* and *public* calls by letting you select the users that you want to talk to regardless of their location

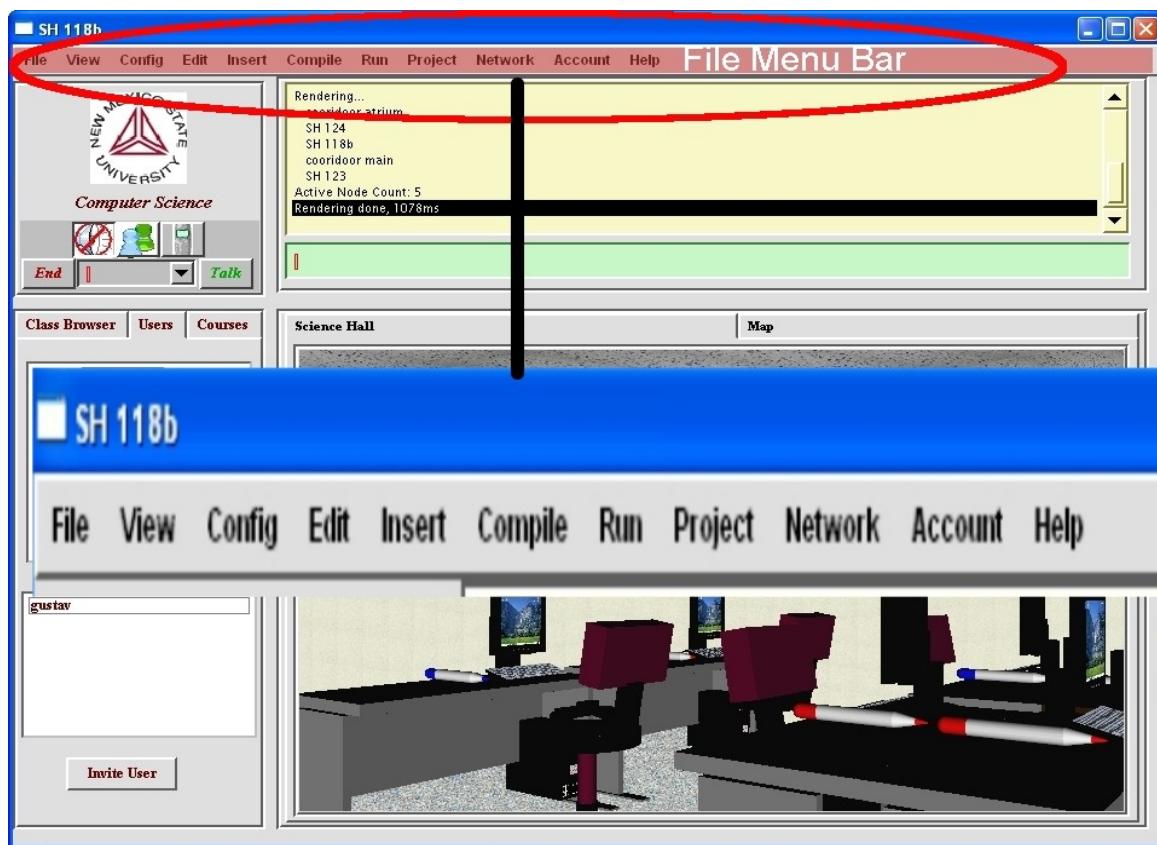
Using the Voice Chat, you can either talk to the people who are currently in the same room as your avatar by using the public conference call function, or have private calls or public conference calls with other users through the virtual cell phone.

## Using the File Menu Bar

You can open or create Java, C, C++ and Unicon Files and Projects using the File Menu Bar. The File Menu Bar is generally used to open and close files that you have created using these programming languages. The File Menu Bar also lets you configure the size of various elements of the screen.

The File Menubar lets you do the following things:

- **Create/Open/Close/Save Files and Projects**
- **Exit CVE**
- **Configure the size of various elements of the screen**
- **Create, Run, Compile Java, C, C++ and Unicorn Files**
- **Add pre-created Unicorn code into your files/projects**
- **Connect/Disconnect to the Server**
- **Configure Account/Avatar Options**
- **Consult Help Guides and Guidelines**



The following functions are contained in each menu item on the File Menu Bar:

1. **FILE:** Open/ Close/ Save Files / Save Chat Transcripts / Take Screenshot/ Exit
2. **VIEW:** Change the size of various screen windows
3. **EDIT:** Cut/ Copy/ Paste/ Select All/ Find and Replace/ Go to Line
4. **INSERT:** Insert precreated Procedure/ Class/ Method Unicorn Code
5. **COMPILE:** Make Executable/ Compile Only/Compiler Options
6. **RUN:** Run Program
7. **PROJECT:** Create A New/ Open an existing C/C++/Java/Unicorn Project/ Compile a Project / Make Clean / Make Clean All
8. **NETWORK:** Connect/Disconnect From the Server

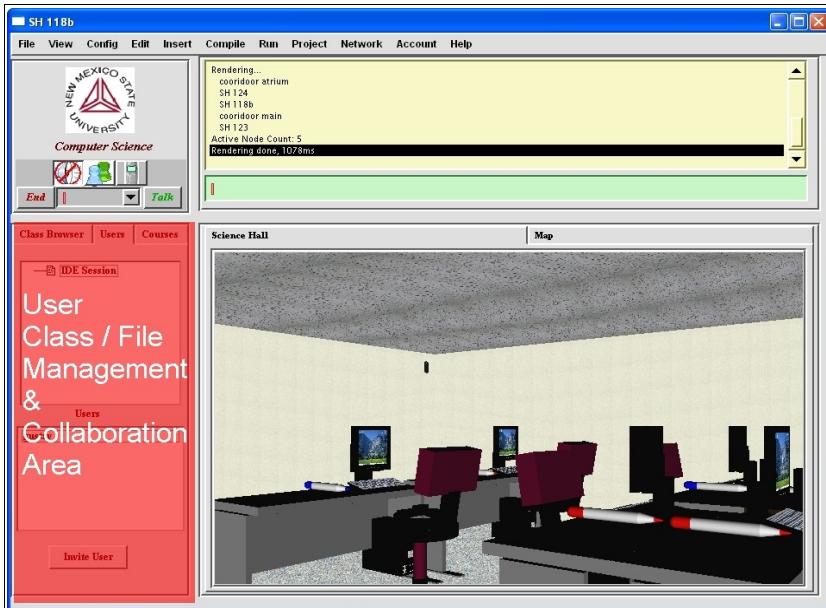
9. **ACCOUNT:** Change Password/Account/Avatar/Face
10. **HELP:** User Guide /Key Commands / About CVE Version

## Using the Class/File Management and Collaboration Functions

An important part of CVE is located in the class/file management and collaboration area, which has three different functions:

- (1) The **Class Browser Tab** lets you know what users are online in your class
- (2) The **Users Tab** lets you contact other users as well as initiate collaborative sessions
- (3) The **Courses Tab** informs you about which courses you are signed up for

This area is central to your experience in CVE, because it lets you see which users are



present in the virtual environment so that you can work, chat or collaborate with them. Typically, when you are using CVE, you will be looking over here to see who you can chat with.

In addition, this area can display a tree showing files that you have created using the ***Idaho Collaborative Integrated Development Environment*** (ICI). The collaborative area lets you create your programs using the IDE and share your programs with other users in CVE, who can watch your screen as you program, and give you feedback through text or voice chat.

## **Chapter 4: Exploring the 3D Environment**

This chapter describes how to move your avatar around in CVE. Moving your avatar is easy. Generally, the **Up, Down, Left, Right** keys are used for moving around CVE.

This chapter contains the following sections:

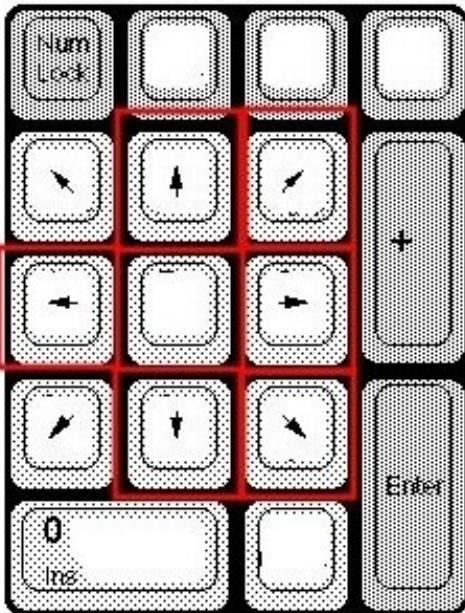
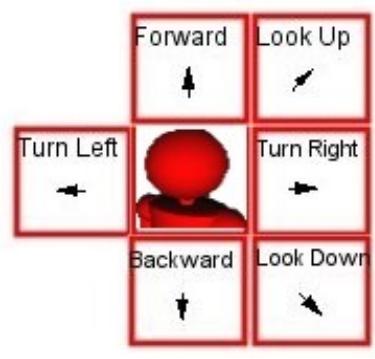
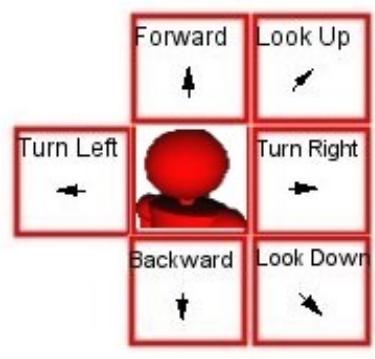
- **Moving Forward & Backwards/ Turning Left & Right/ Moving Sideways and Looking Up & Down**
- **Teleporting one's avatar to meet other users**
- **Quicklist Avatar Movement**

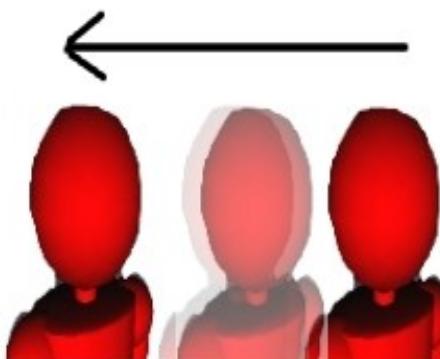
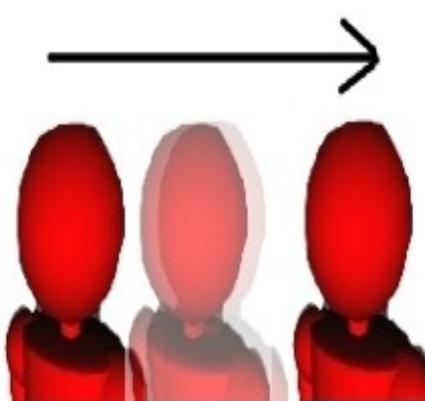
**NOTE:**

Next to moving around, it is also important to learn how to **teleport** one's avatar, since this will facilitate you meeting other users' avatars in a quick fashion without having to look for each other first.

### **Moving, Turning, Moving Sideways and Looking Up & Down**

When you want to move your avatar throughout CVE, simply use the **↑ Up, ↓ Down, ← Left** and **→ Right** arrow keys to move forward, backwards and to turn left and right. In addition, use **Pg Up / Numpad 9** and **Pg Dwn/Numpad 3** to look up and down.

Action	Keys/Alternate Keys	Avatar Action
Move Forward	(Up Arrow) / NumPad 8	
Move Backward	(Down Arrow) / NumPad 2	
Turn Left	(Left Arrow) / NumPad 4	
Turn Right	(Right Arrow) / NumPad 6	
Look up	NumPad 9/ Ctrl W	Look Up
Look down	NumPad 3 / Ctrl S	Look Down

Action	Keys/Alternate Keys	Avatar Action
Move Avatar Sideways Left	<b>CTRL</b> <b>F</b>	<p>Ctrl F - Move Sideways Left</p> 
Move Avatar Sideways Right	<b>CTRL</b> <b>G</b>	<p>Ctrl G - Move Sideways Right</p> 

## Teleporting one's avatar to meet other users

Next to moving one's avatar, it is also possible to **teleport** to a stable point that is the same for everybody. By using the teleport function you can quickly meet with someone you know is online, but who is not in your immediate vicinity.

**NOTE:**

**The Teleport Function** is especially helpful when you want to meet another user without having to find each other first. Instead, you can text chat that user and ask them if they would like to transport to the beginning of science hall.

In doing so, you can immediately start interacting with the user's avatar or engage in a conference room call. **The Teleport function is an easy way to get in touch with someone else's avatar when you are looking for each other but cannot find each other's avatar immediately.**

**Teleport to Science Hall entrance:**



When you utilize the teleport function, you are immediately taken to the entrance to Science Hall. This is incredibly useful when you want to meet with other users to have face-to-face avatar interaction or conference calls.

## Quicklist Avatar Movement

Here's quick list of the controls to moving your avatar. The function of these controls are described in more detail above.

Action	Keys	Avatar Action
<i>Move Forward</i>	(Up Arrow) / NumPad 8	Moves avatar forward
<i>Move Backward</i>	(Down Arrow) / NumPad 2	Moves avatar backward
<i>Turn Left</i>	(Left Arrow) / NumPad 4	Turns avatar left
<i>Turn Right</i>	(Right Arrow) / NumPad 6	Turns avatar right
<i>Move Avatar Sideways Left</i>		Avatar moves sideways left
<i>Move Avatar Sideways Right</i>		Avatar moves sideways right
<i>Look Up</i>	 NumPad 9/ Ctrl W	Looks up (First Person Only)
<i>Look Down</i>	 NumPad 3 / Ctrl S	Looks down (First Person Only)

Action	Keys	Avatar Action
Teleport	 	Teleport to the beginning of Science Hall

## **Chapter 5: Interacting with Other Users**

This chapter explains how to interact with other users in CVE. Because you will be working collaboratively with other users on a variety of projects, you will be expected to know how to interact with other virtual users through your avatar. CVE is created for multiple users to engage in collaborative interaction, so it is important that you are aware of your avatar's functions in interacting with other users. A lot of these interactive functions are activated through key combinations usually involving CTRL and a Letter Key.

**NOTE:**

A lot of the below actions serve a social purpose: to make other users aware of you so that you can exchange particular kinds of information, such as waving at another user so you can initiate a chat session with them, or pointing at a particular object in CVE.

Just like you do in the real world, you can interact with others users through these kinds of social signals.

This chapter describes the following elements:

- **Opening/Closing Doors/ Knocking on Doors/ Saying Hello & Goodbye to Other Users**
- **Switching between first and third person views**
- **Greeting Someone/Getting Someone's Attention/Giving Thumbs Up**
- **Pointing at Something/Someone (Up/Down/Left/ Right/Forward)**
- **How Your Avatar Actions Appear to Other Users**
- **Quicklist Opening/Closing Doors/ Knocking on Doors/ Saying Hello and Goodbye**
- **Quicklist Avatar Interactions**

### **Opening/Closing Doors/ Knocking on Doors/ Saying Hello & Goodbye to Other Users**

Next to moving around, you'll also be asked to interact with various objects in the virtual environment. One of the key components in the virtual environment is being able to open doors, as well as announcing your presence to other users. While it is relatively easy to knock on a door in the real world so that others notice you are there, in the virtual environment a variety of key combinations is used to open a door as well as announcing your presence to other users. It is important that you do so, since it will not always be clear to other users that a new person has entered the room.

## ***Opening/Closing a Door***

It is important to be able to open a door. The following key combination will open as well as close doors:

<i>To open or close a door:</i>	 
---------------------------------	--



## ***Knocking on a Door***

It is also possible to knock on the door first to announce your presence. This lets other users know that there is a new person that they can interact with, as well as allowing you to join smoothly with other users in the virtual environment.

<i>To knock on a door:</i>	 
----------------------------	--



## ***Saying “Hello” and “Goodbye”***

Next to knocking on a door, after you have opened a door, it is also possible to acknowledge when you have just entered a room by playing a “Hello” sound. This is a good way of letting other users know that a new person has entered their room with whom they can interact. In addition, it is also important to let other people know when you are leaving a room by playing a “goodbye” sound.

<i>To say hello:</i>	 
----------------------	--



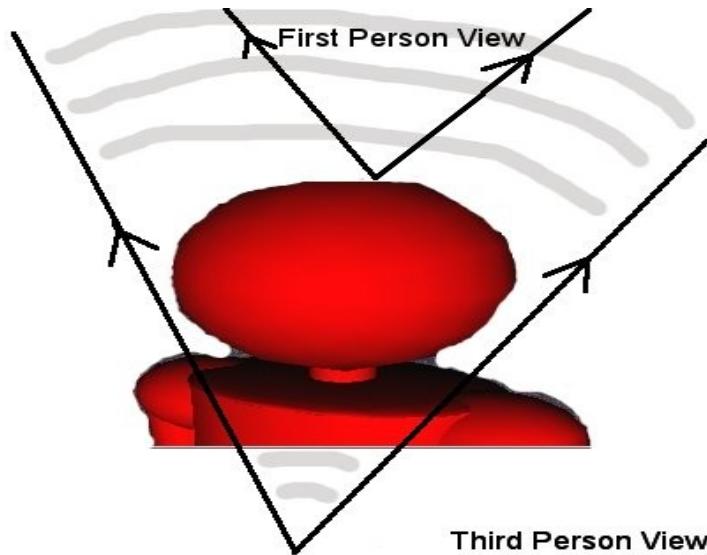
*To say goodbye:*



Knowing these functions will let you enter and exit rooms in a way so that other will notice.

## Switching between First and Third Person views

In CVE it is possible to switch between first and third person views. Just like saying "I" or "He/She" is used to differentiate between yourself and others, first person and third person views are a matter of perspective that give you different options in the virtual environment. Whereas first person is used exclusively to look at objects from a single person perspective - a third person view is a view in which your own avatar is included, allowing you to make gestures and point at objects and other users.

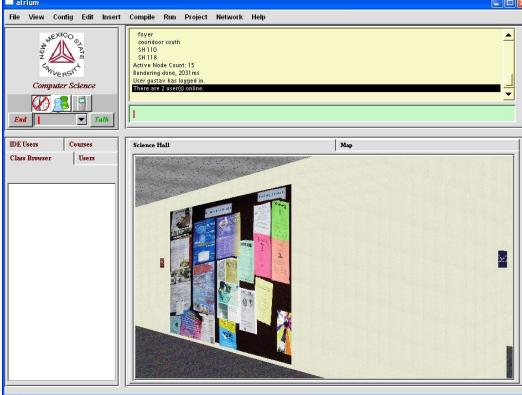
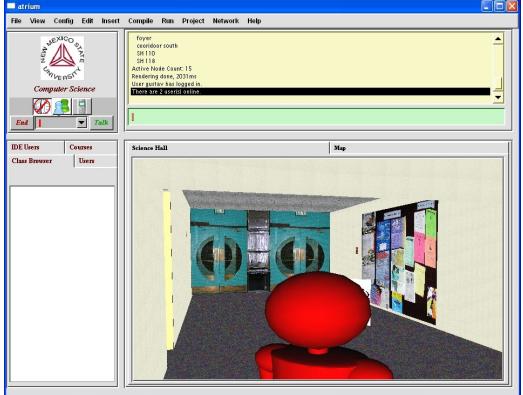


- A **first person view** - a subjective view from where your avatar is standing, giving you the opportunity to examine objects closely
- A **third person view** - an objective view that includes your avatar as seen from behind, giving you more contextual information, such as indicating where your avatar is standing in relation to other objects and users in CVE, allowing you to make gestures to other users or point at particular objects.

### NOTE:

An important function in CVE is knowing how to **switch between First person and Third person avatar views (Ctrl + V)**, because these allow you to do different things in CVE.

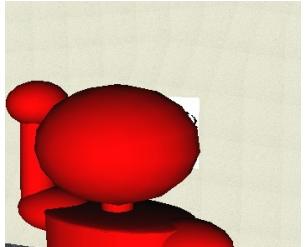
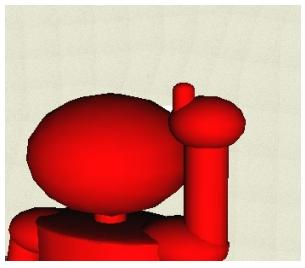
The **First person** view lets you examine things closely, whereas the **Third person** view lets you make gestures and point at objects and users.

First Person Perspective	Third Person Perspective
	
<p data-bbox="246 707 816 878"><i>First person view is a <b>subjective</b> view that lets you examine objects closely but does not give as wide a perspective as third person</i></p>	<p data-bbox="816 707 1374 878"><i>Third person views is an <b>objective</b> view that includes your avatar as seen from behind and in relation to other users and objects</i></p>

The importance of first person and third person views is that the third person view gives you the opportunity to do specific avatar actions, which are described in detail below.

## Greeting Someone/Getting Someone's Attention/Giving Thumbs Up

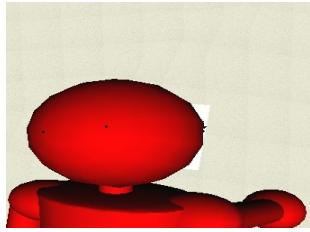
These movements can be used to signal that you are trying to get another user's attention by waving at them (pressing **Ctrl E**), or simply to give them a thumbs up (**Ctrl U**).

Action - Connotation	Keys	Third Person View
<i>Put left arm up</i> <i>Greet someone</i> <i>Get their attention</i>	 	
<i>Put right arm up</i> <i>Give someone thumbs up/ Approve</i>	 	

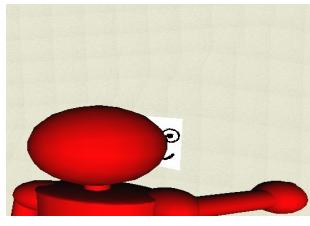
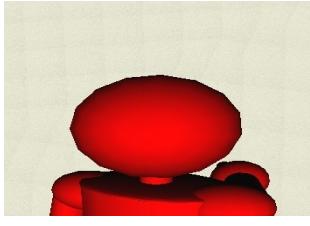
## Pointing at Something/Someone

Your right arm has the capability of moving in an **Up/Down moving direction**, so that you can point at a particular object or person in CVE. Your avatar's right arm can also move **Left, Right and Forward** to allow for pointing to objects or persons on the left/right/forward side. Below are the function keys for making your avatar perform these actions.

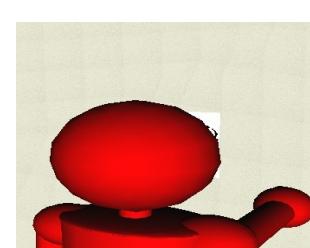
## Pointing at Something/Someone Up/Down

Action-Meaning	Keys	Third Person View
<p><i>Point up slowly with right arm</i></p> <p><i>Point up to something/someone</i></p>	 	
<p><i>Point down slowly with right arm</i></p> <p><i>Point down to something/someone</i></p>	 	

## Pointing at Something/Someone Left/ Right

Action-Meaning	Keys	Third Person View
<p><i>Point Right</i></p> <p><i>Point to something/someone on the right</i></p>	 	
<p><i>Point Left</i></p> <p><i>Point to something/someone on the left</i></p>	 	

## Pointing at Something/Someone in front of you

Action-Meaning	Keys	Third Person View
<p><i>Point Forward</i></p> <p><i>Point to something/someone in front of you</i></p> <p><i>Give someone a turn</i></p>	 	

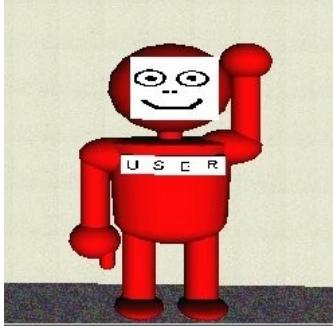
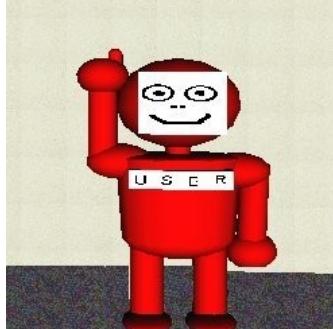
## How Your Avatar Actions Appear to Other Users

Below is an overview of how the above actions appear to other users. It is important for you to know, since other users will see your actions from this perspective.

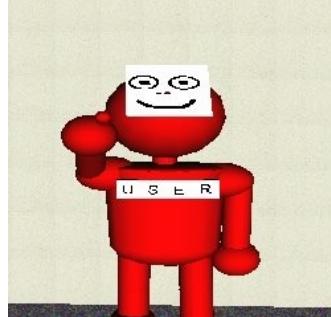
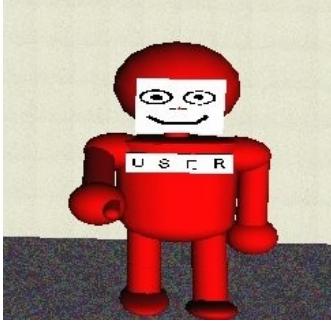
**NOTE:**

*Keep in mind that it takes some time to point at something to another user, since it will not always be immediately clear to them where you are pointing.*

### *Greeting/Getting Someone's Attention*

Action	Keys	View by Other User
<i>Greet</i>  <i>Get Someone's Attention</i>	 	
<i>Give someone thumbs up</i>  <i>Approve</i>  <i>Ask to say something</i>	 	

## *Pointing Up/Down to Something/Someone*

Action	Keys	View by Other User
<i>Point up to something/someone</i>	 	
<i>Point down to something/someone</i>	 	

## *Pointing Left/Right to Something/Someone*

Action	Keys	View by Other User
<i>Point to something/someone on the left</i>		A red, cartoonish robot with a white rectangular face featuring large eyes and a smile. It has a small black tag on its chest that says 'USR'. Its right arm is extended forward, pointing towards the left.
<i>Point to something/someone on the right</i>		A red, cartoonish robot with a white rectangular face featuring large eyes and a smile. It has a small black tag on its chest that says 'USR'. Its left arm is extended forward, pointing towards the right.

## *Pointing to Something/Someone In Front of You*

Action	Keys	View by Other User
<i>Point to something/someone in front of you</i>		A red, cartoonish robot with a white rectangular face featuring large eyes and a smile. It has a small black tag on its chest that says 'USR'. Its arms are at its sides, and it is looking directly forward.

## Quicklist Opening/Closing Doors/ Knocking on Doors/ Saying Hello and Goodbye

Here's a quicklist for opening/closing /knocking on doors, as well as saying "Hello" and "Goodbye" to other users

Action	Keys	Action
Open/ Close door		Opens/ Closes Door
Knock on Door		Plays "Knock on Door" sound
Say "Hello"		Plays "Hello" sound so other users know you are entering the room
Say "Goodbye"		Plays "Goodbye" sound so other users know you are leaving the room

## Quicklist Avatar Interactions

Here's a quicklist for all of the actions described. More full descriptions for these functions are described above.

**NOTE:**

Because many of these **social gestures are not visible when you are in first person mode, they can only be done in third person.**

Hence, the chart below indicates the action, the keys that cause that action to happen, as well as the view in which these actions are allowed.

Action	Keys	VIEW
Switch First/Third Person Avatar View		First & Third Person
Put left arm up		Third Person only
Put right arm up (thumbs up)		Third Person only
Point right arm up		Third Person only
Point right arm down		Third Person only
Point left with right arm		Third Person only
Point right with right arm		Third Person only

Action	Keys	VIEW
<i>Point right arm forward</i>	 	Third Person only

# Chapter 6: Using Text Chat

This chapter describes the text chat function. In CVE it is possible to chat with single or multiple users.

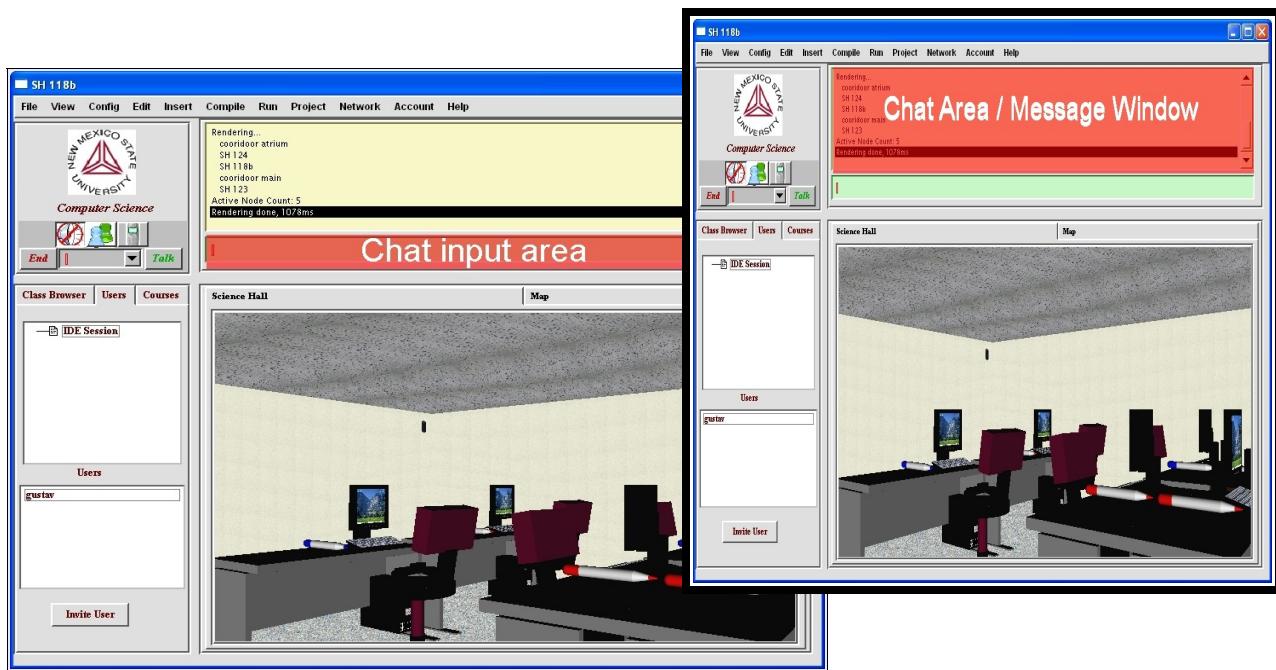
This chapter contains the following:

- **Creating Single User Chat Messages**
- **Creating Multiple User Chat Messages**
- **Seeing Who is Logged In**
- **Quicklist Chat Commands**

## NOTE:

It is easy to use text chat, simply type in a chat command and your message in the **Chat input area**, and it will show up in the **Chat Area/ Message Window**.

However, since a distinction is made between messages between single and multiple users, CVE uses the \tell command to address a single user.



## Creating Single user Chat Messages

It is also possible to have a single user chat by telling an individual user only. To tell only a single specific user, simply format it like this:

```
\tell [user name] [type your message here] [Press "Enter"]
```

typing in:

```
\tell cjeffery How are you?
```

in the chat input area would *only* tell user Jeffery this question. This means that only cjeffery would receive this message. If I wanted to ask everybody that is currently logged in, I would use the **Multiple User Chat** format as described below.

## Creating Multiple User Chat Messages

It is possible to send chat messages to multiple users at once. Generally, a multiple user text chat is formatted like this:

```
[type your message here] [Press "Enter"]
```

An example:

typing in:

```
Hello everybody! [Press Enter]
```

In the chat input area would therefore create a text message in the Chat Area/ Message Window from you that reads “Hello everybody!” and would be received by all users currently logged in.

## Seeing Who is Logged in

One way to check who is on-line is

```
\who
```

At present this does not tell you too much, in future it will be expanded to include where they are located, what they are doing, and so forth.

## Quicklist Chat Commands

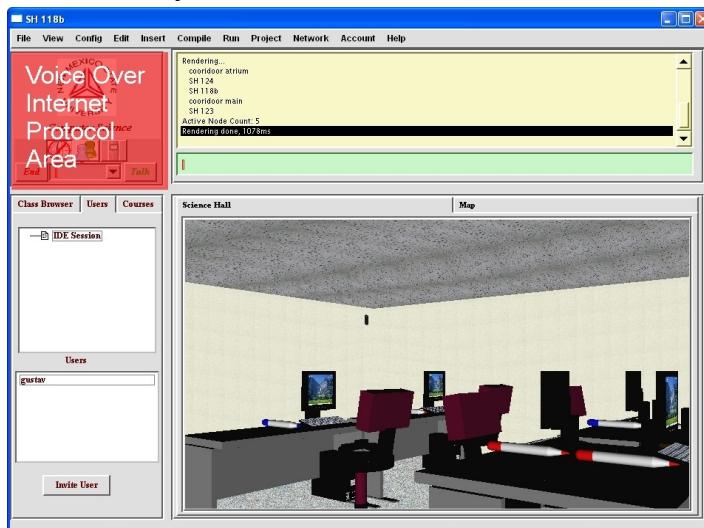
Here's a quick list of the chat commands described above. More full descriptions of these commands are found above.

<b>Chat Message</b>	<b>Chat Command Format</b>
<b>Single User</b>	\tell [username] [message] [Press "Enter" Key]

<b><i>Chat Message</i></b>	<b><i>Chat Command Format</i></b>
<b><i>Multiple Users</i></b>	[message] [Press "Enter" Key]
<b><i>Check Who is Logged In</i></b>	\who [Press "Enter" Key]

## Chapter 7: Using Voice Chat to Talk to Other Users

This chapter describes how to use the Voice Chat function so that you can voice chat in real-time with other users who are logged. Voice Chat uses your computer as a telephone, so that anybody equipped with speakers and a microphone can have a PC-to-PC phone conversation with you via Voice-Over Internet Protocol (VOIP). The **VOIP area** is located in the left hand corner of your screen.



This chapter describes the following:

- **Turning on/off Voice Chat**
- **Making Quick Phone Calls**
- **Making Virtual Cell Phone Calls**
- **Making Room Based Public Conference Calls**
- **Hiding the Virtual Cell Phone or Conference Call Function**
- **Turning Off Phone Calls**

### **NOTE:**

*In order for Voice Chat to work, you will need to have speakers attached to your computer, as well as a microphone connected to your computer.*

If you do not have these items connected to your computer, the VOIP function will remain **OFF**

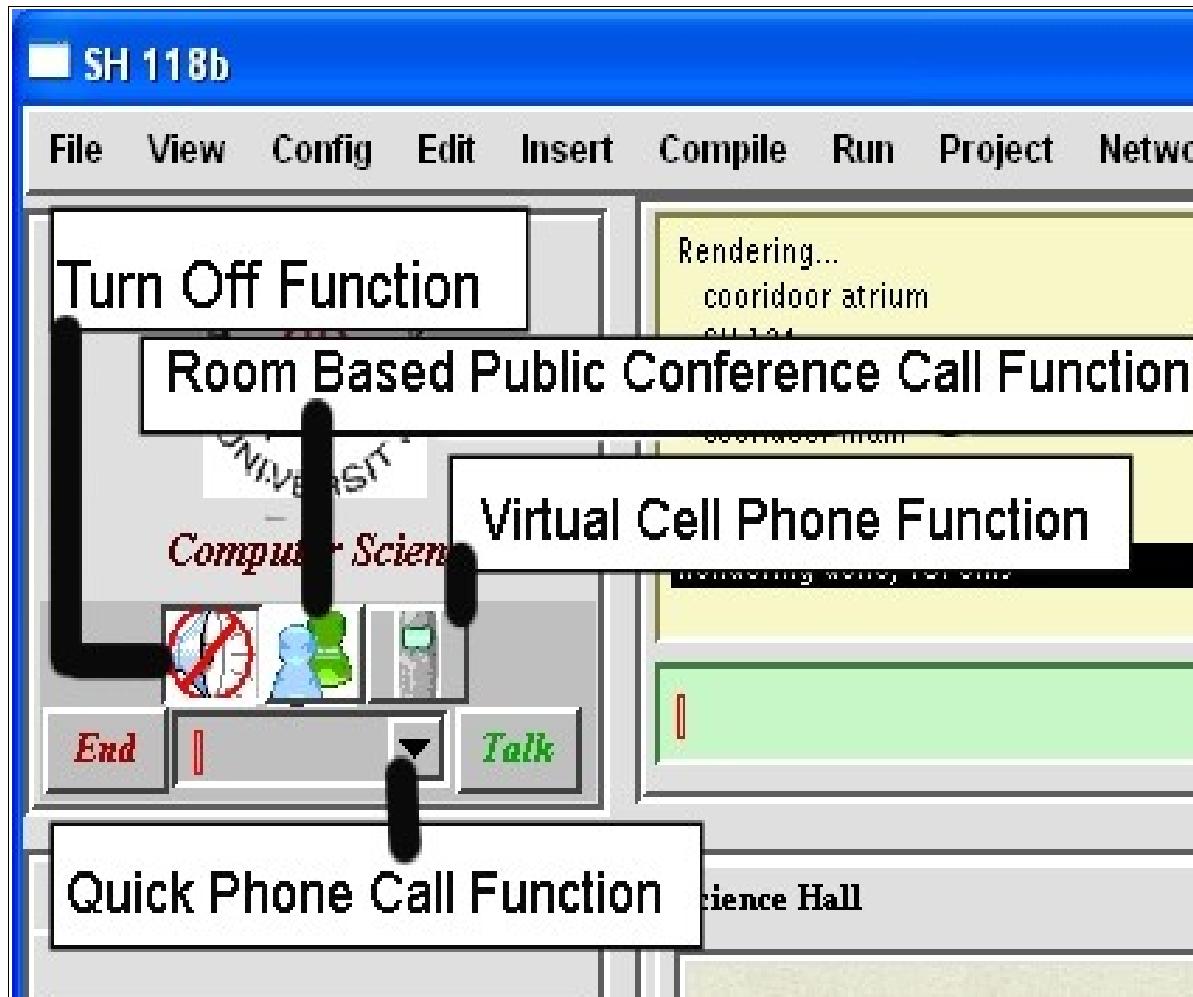
CVE is equipped with the following capabilities:

- A **Turn Off Function**
- A **Quick Phone Call function** to quickly connect privately with other online users

- A **Public Conference Call Function** to talk to whoever is present in the same room as you
- A **Virtual Cell Phone Function** with the ability to have *private* and *public* calls by letting you select the users that you want to talk to regardless of their location

It is important to learn how to make use of the Voice Chat option, since you can have direct conversations with other users, or get to know these users through these conversations. In addition, it is possible to have voice chat while engaged with other tasks, such as programming. Since CVE has the capability to share a work-screen, other users could offer you suggestions through voice chat.

Below is a blowup of the VOIP area with each of these areas and their functions indicated.



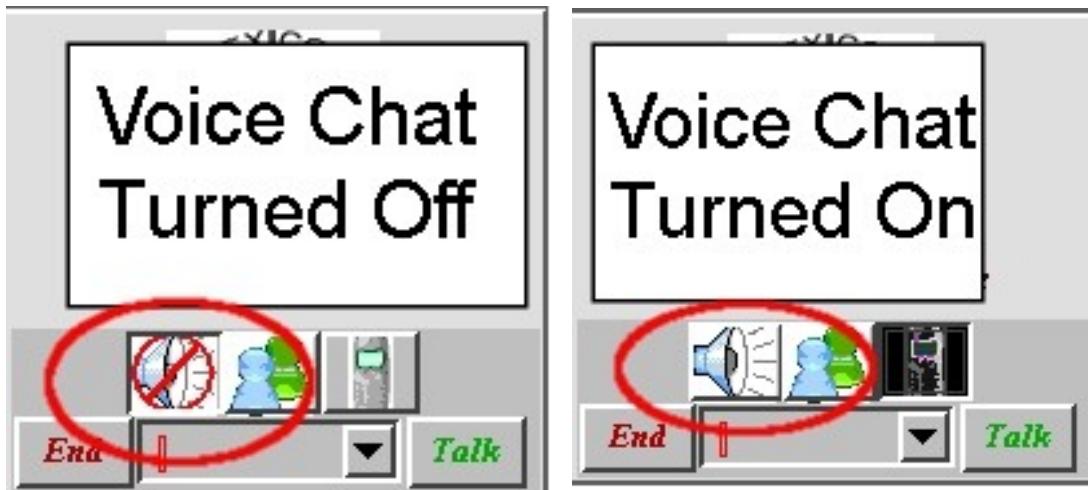
## Turning on/off Voice Chat

**NOTE:**

**By default, Voice Chat is Turned OFF and you cannot talk or receive calls.**

This means that it is assumed that you will turn it on as soon as you want to engage in Voice Chat. Hence, to use any Voice Chat function, your Voice Chat will need to be turned **ON** first.

- 1. To turn on voice chat, click the Turn On/Off Button. To turn off Voice Chat, click the Turn On/Off button again.**



If Voice Chat is turned off, the speaker will be crossed out to indicate that Voice Chat is off; if Voice Chat is on, the speaker will not be crossed out.

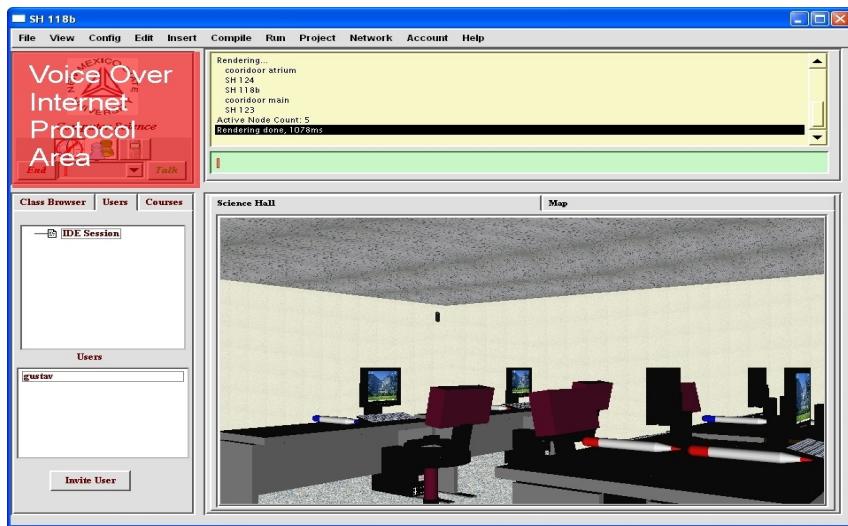
**NOTE:**

All of the steps below require that you have Voice Chat turned on.



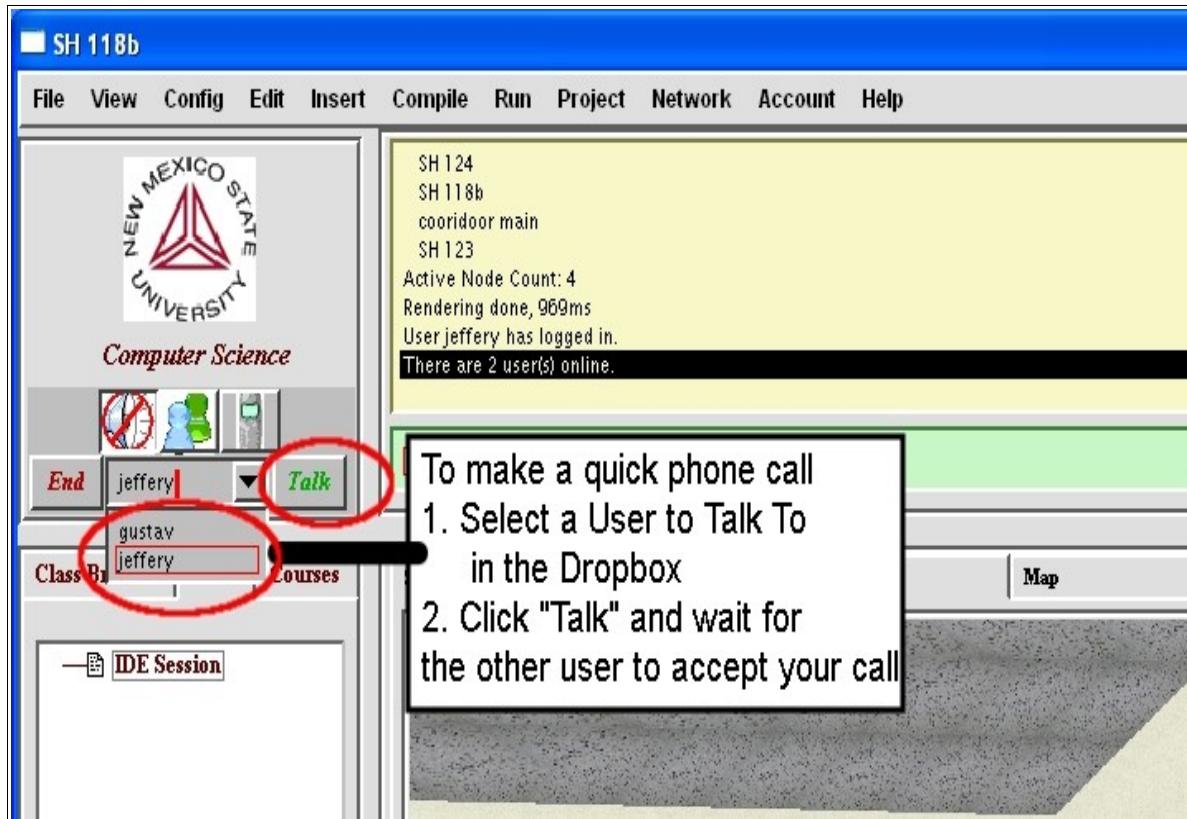
## Making Quick Phone Calls

Quick phone calls are calls to a single user. In order to make a Quick Phone call, simply go the **VOIP Area** in the upper left hand corner. Make sure to have **Voice Chat Turned On**.



1. In the Quick Phone Call Function area, select the user that you want to talk by selecting a person in the dropbox

2. Click "Talk" on the right hand of the dropdown to talk to the user that you have selected



A message will be sent to the other using saying: [username] is calling you!

### **3. Wait for the other user to accept the phone call by turning on their virtual cell phone**

That's it! You can now talk to the user. At any time, if you want to end the Quick Phone call, click on the **End Button**

## **Turning Off Quick Phone Calls**

**1. In order to turn off any existing Quick phone calls, simply click the “End” button located on the left of the dropbox.**



Clicking the “End” button will end any Quick Phone conversation that you are having.

## **Making Virtual Cell Phone Calls**

Next to making Quick Phone calls, CVE can also handle private single user-to-single user, as well as single user-to-multiple user virtual cell phone calls. As in real life, when you answer your cell phone, the virtual cell phone lets you select who you want to talk to as well as who you want to put on hold.

The virtual cell phone can do the following functions in managing your calls:

- It displays who you are currently calling (displayed in the **Outgoing Calls**),
- It displays who is currently trying to reach you (**Incoming Calls**)
- It displays which people you are currently talking to (**Online**)
- It lets you *hold* current conversations when answering incoming calls from other users (**On Hold**)
- It lets you *hide* the virtual cell phone organizer screen so that you can carry on with your tasks while continuing Voice Chat (**Hide**)

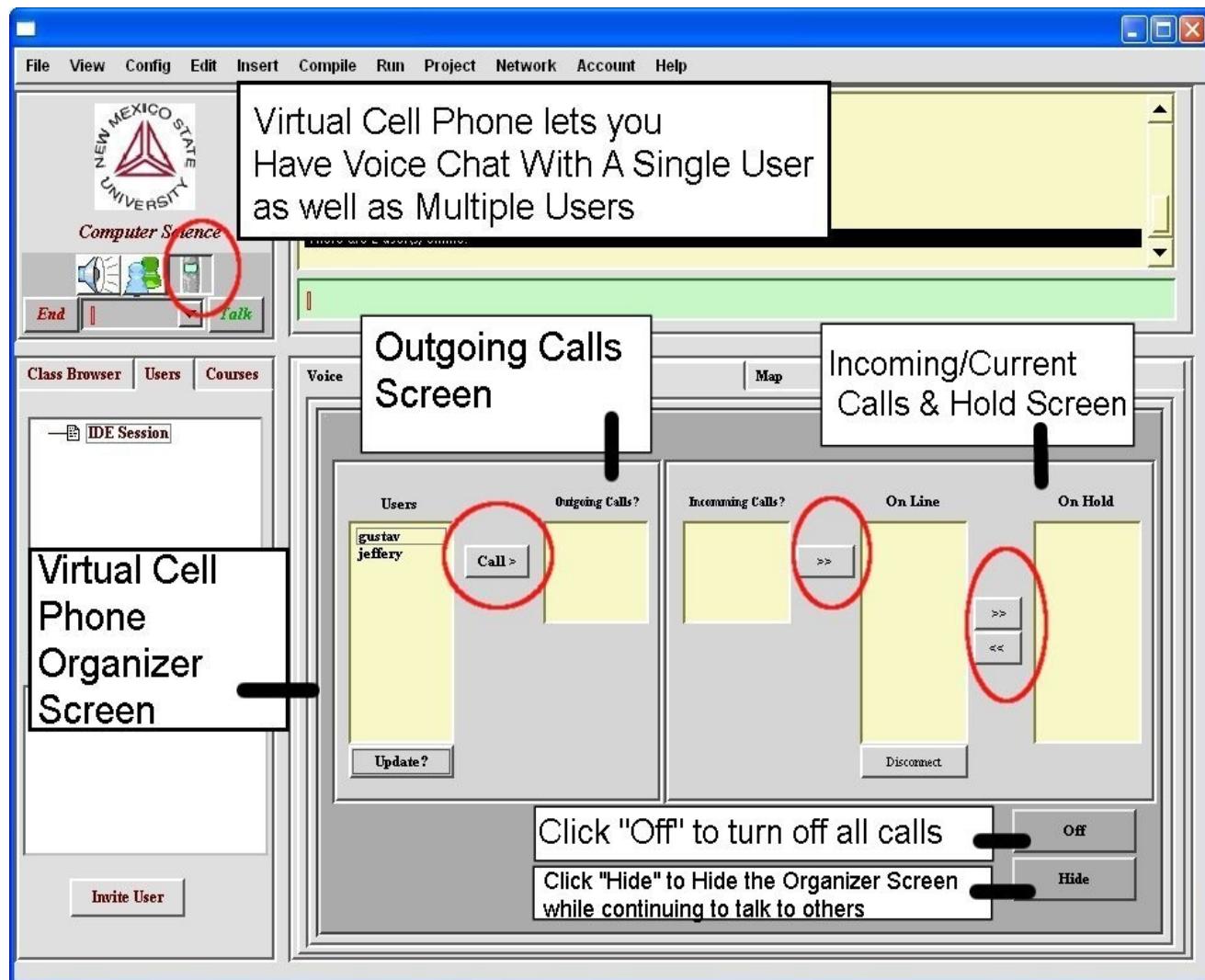
**NOTE:**

**When other users are available to talk to, the following message will appear in your Chat Area/Message Window:**

"[username] : My Virtual Cell Phone is ON"

This message indicates that this particular user is available to receive calls from you and other users.

Below is an overview of the Virtual Cell Phone functions:



The following Virtual Cell Phone options will be described below:

- Making a virtual cell phone call to a single user
- Making a virtual cell phone call to multiple users
- Answering an incoming call / Putting a current Voice Chat on hold/ Disconnecting calls
- Hiding the Virtual Cell Phone Organizer Screen
- Turning Off the Virtual Cell Phone

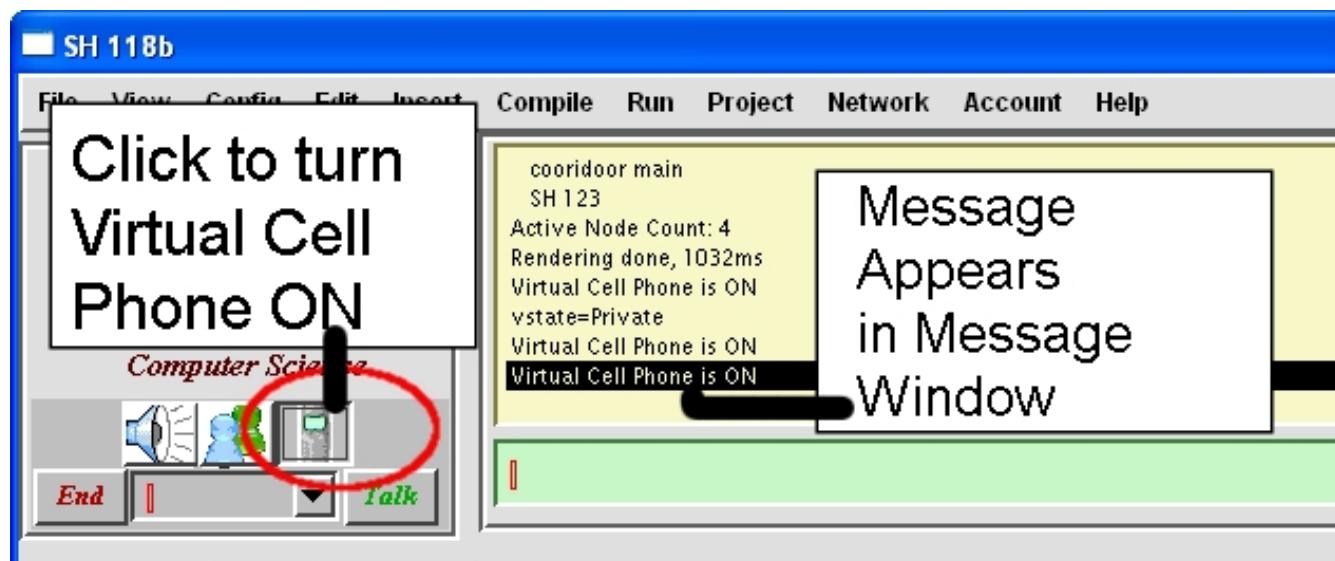
### ***Making a virtual cell phone call to a single user***

**NOTE:**

In order to make a **Virtual Cell Phone Call**, both the sender and receiver of the virtual cell-phone call will need to have their virtual cell-phones Turned ON.

A message will appear in each user's Chat Area/Message Window indicating that a specific user's Virtual Cell Phone is Turned On. Whenever a call is made, the receiver will be notified that the sender is trying to reach them, at which point the receiver can answers the call by turning on their virtual cell phone and accepting the call, or declining the call by not answering.

1. In order to make a single user phone call, turn on your virtual cell phone by clicking on the virtual cell phone icon. The Virtual Cell Phone Organizer Screen should now appear in the 3D View Area.



A message will appear in both the virtual cell phone user's screen and that of other users that this person's virtual cell phone is turned on, indicating that this person can now receive and

make virtual cell phone calls.

**2. Simply select the person's name that you want to call in the User area, and click the "Call" button.**

"I am calling [person's name]" will appear in the sender's Chat Area Message Window.

If the receiver's Virtual Cell Phone is OFF, the sender will get an automatic message from the receiver saying "[username]: sorry, the Cell Phone is OFF!".

**NOTE:**

Getting a message from a receiver saying

"sorry, the Cell Phone is OFF!"

can mean two things:

**The receiver needs to Turn On their Virtual Cell Phone** in which case they will answer your call

**The receiver is currently unavailable to talk to**, in which case they will not answer your call

**3. If your call is accepted, the following message will appear in sender's Message Window: "[username] has accepted your call". The user will be placed in the "Online" part of the Virtual Cell Phone Organizer screen.**

**NOTE:**

To end a virtual cell phone conversation with any user, select their name and click "**Disconnect**".

To end all conversations by turning off the virtual cell phone, simply click "**Off**".

To Hide the Virtual Cell Phone Organizer screen click "**Hide**"

### ***Making a virtual cell phone call to multiple users***

Making a virtual cell phone call to multiple users is simple, and involves the same steps as calling a single user. Instead of selecting one person, you select each person and press "Call".

**1. In order to make a multiple user phone call, make sure you have your virtual cell phone turned on by clicking on the virtual cell phone icon. The Virtual Cell Phone Organizer Screen should now appear.**

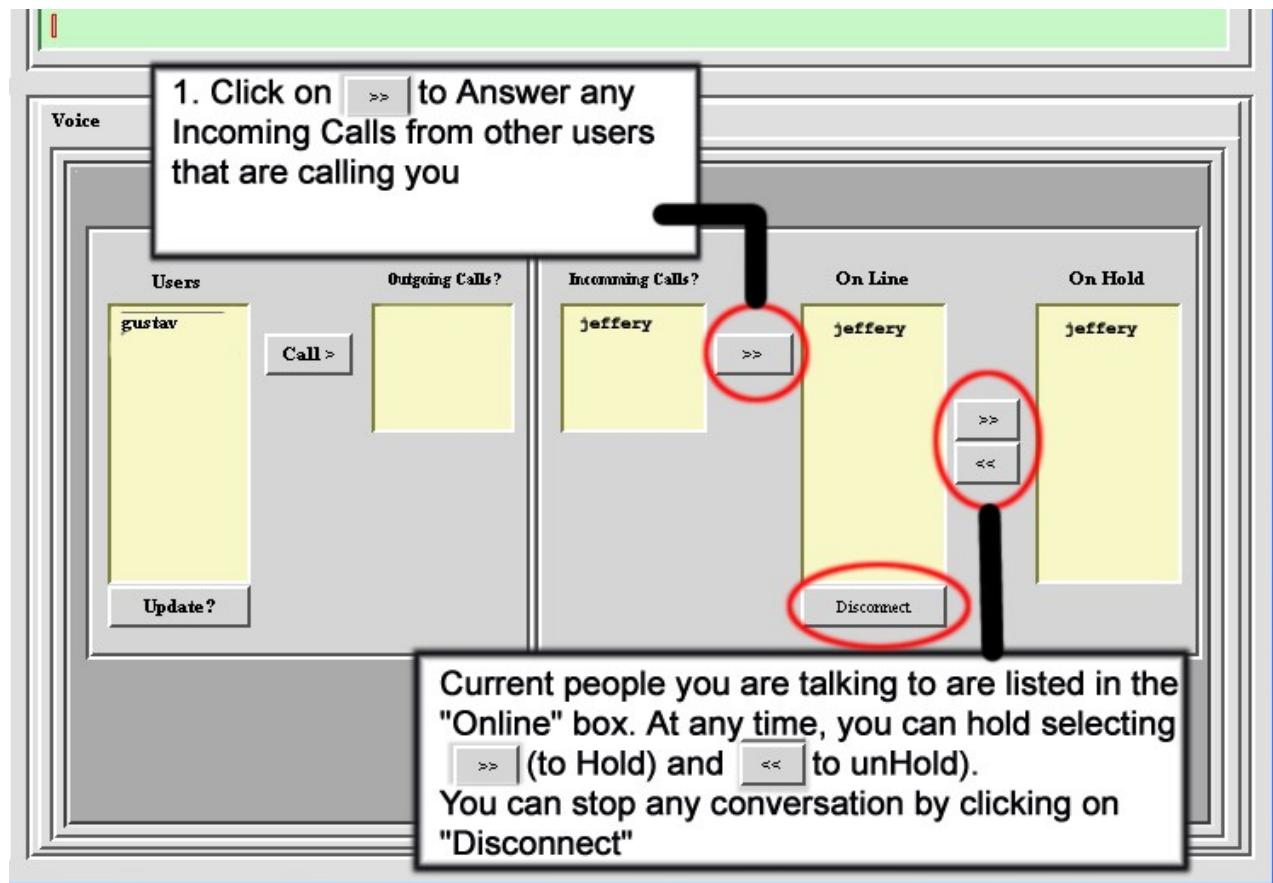
**2. In the Virtual Cell Phone Organizer Screen, Simply select each user in the call screen, and press the “Call” button after selecting each user. Each user will appear in the Outgoing calls box in your Virtual Cell Phone Organizer Screen to indicate that you are calling them.**

### ***Answering an incoming call***

When someone tries to call you, a message will appear in your **Chat Area /Message Windows** that this person is calling you.

To answer an incoming call, do the following:

**1. Turn on your Virtual Cell Phone (if it's not on already) and go to the Virtual Cell Phone Organizer Screen.**



**2. In the Incoming Calls box select the person's name by left mouse clicking their name, and press the >> button to talk to the person.**

**NOTE:**

To end a virtual cell phone conversation with any user, select their name and click “**Disconnect**”.

To end all conversations by turning off the virtual cell phone, simply click “**Off**”.

To Hide the Virtual Cell Phone Organizer screen click “**Hide**”

### ***Putting a current Voice Chat on hold***

The Virtual Cell Phone also makes it possible for you to put someone on “**Hold**”. This means that you can then talk to another person while the original person waits for you to resume your Voice Chat conversation with them.

To hold someone on Voice Chat, simply do the following:

**1. In the Online box with current users that you are Voice Chatting with, select the user that you want to put on hold by left mouse-clicking on their name**

**2. On the right side of the Online box, press the >> button to put the user on Hold**

This will move the user into the Hold box, indicating that they are on Hold

**3. To unHold a user, press the << button so they will be moved back into the Online chapter**

### ***Hiding the Virtual Cell Phone Organizer Screen***

**NOTE:**

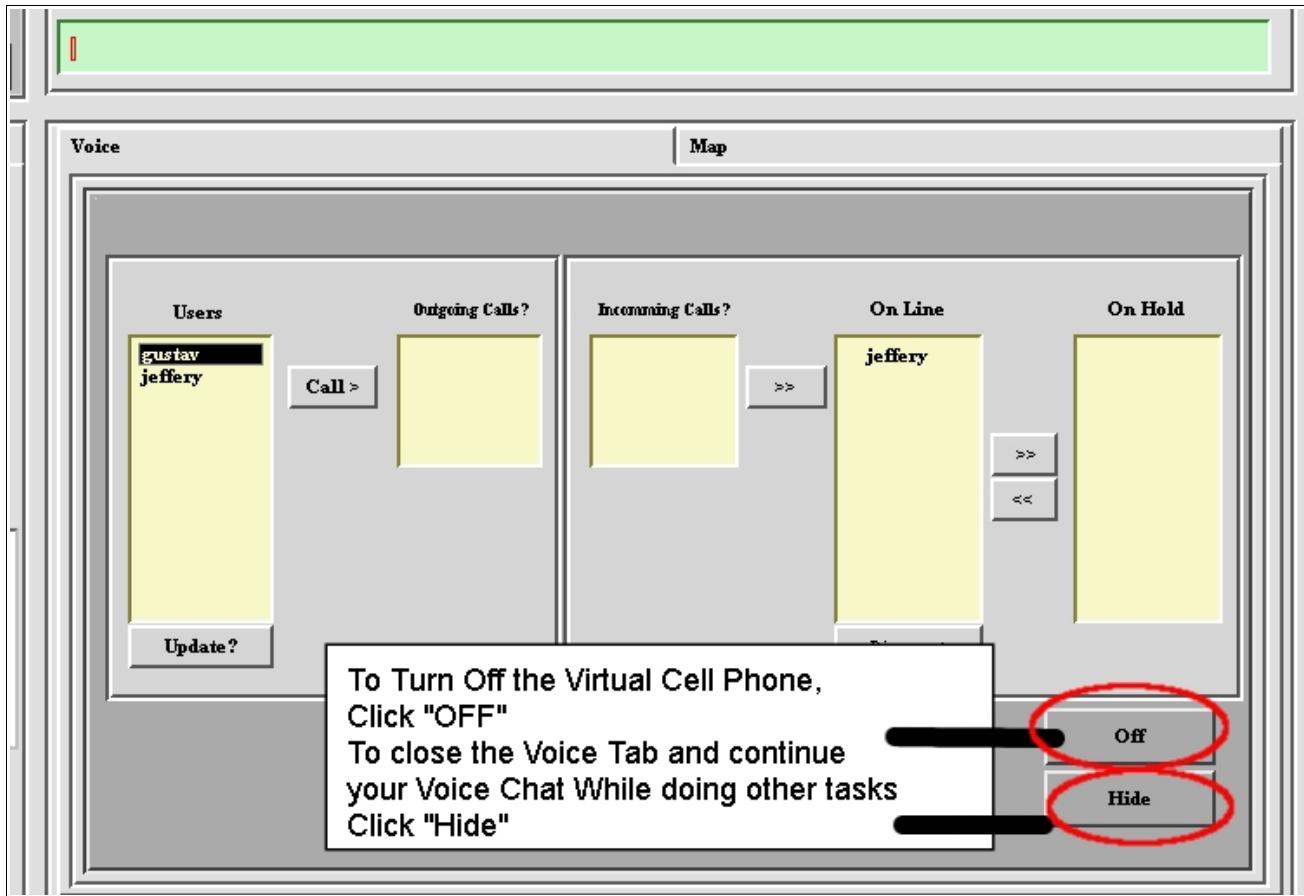
**At any time, it is possible to “**Hide**” the virtual cell phone organizer screen so that you can continue performing other tasks.**

For instance, while talking to somebody, you want to move your avatar. Or, perhaps you want to edit a file while engaged in a Voice Chat.

In this case it is easy to use “**Hide**” to *Hide the Virtual Cell Phone Organizer Screen* so that you can return to the 3d Navigation area.

To hide the Virtual Cell Phone Organizer Screen, Simply do the following:

1. Click the “**Hide**” button in the Virtual Cell Phone Organizer Screen to *hide the Virtual Cell Phone Organizer Screen*.



**NOTE:** To return to the **Virtual Cell Phone Organizer Screen**, simply press the Virtual Cell Phone again.

## ***Turning Off the Virtual Cell Phone/ Ending All Voice Chat Conversations***

At any time, it is possible to turn off the Virtual Cell Phone. If you turn off the Virtual Cell

Phone, you are ending **all** Voice Chat conversations. You can do this by doing the following:

**To turn off the Virtual Cell Phone and end **all** conversations, click the “Off” button on the bottom of the Virtual Cell Phone Organizer Screen.**

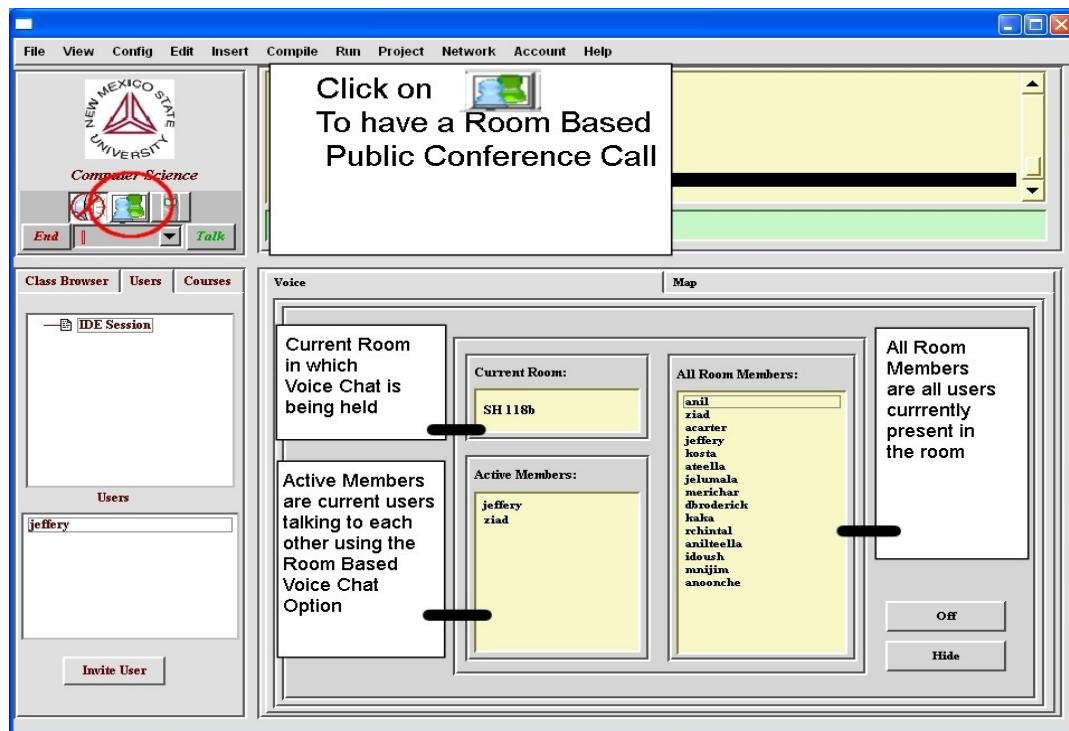
## Making Room Based Public Conference Calls

In CVE it is also possible to have **Room Based Public Conference calls**. A Room Based Public Conference (or Room Based) call is different from the Virtual Cell Phone because it enables you have a Voice Chat with whoever is present in the current room or joins that room. The Room Based call is explicitly public, meaning that anybody can join a Voice Chat provided their avatar is in the specific room in which the Room Based call is being held.

**NOTE: The Room Based Public Conference Call function lets you have a Voice Chat conversation with whoever is in the same room as your avatar.**

In essence, the Room Based Call is a way to convene and meet with other users in your vicinity. It is also a way to have a public meeting with various other users. For instance, you could all agree to meet at a particular room at a particular time, and by enabling the Room Based Public Conference Call function, conduct a meeting.

**To enable a Room Based Public Conference Call, click on the Public Conference Call Icon as depicted below.**



The Voice Tab will appear, allowing you to see those currently using the Room Based Call option (**Active Members**) as well as all users currently present in the room (**All Room Members**)

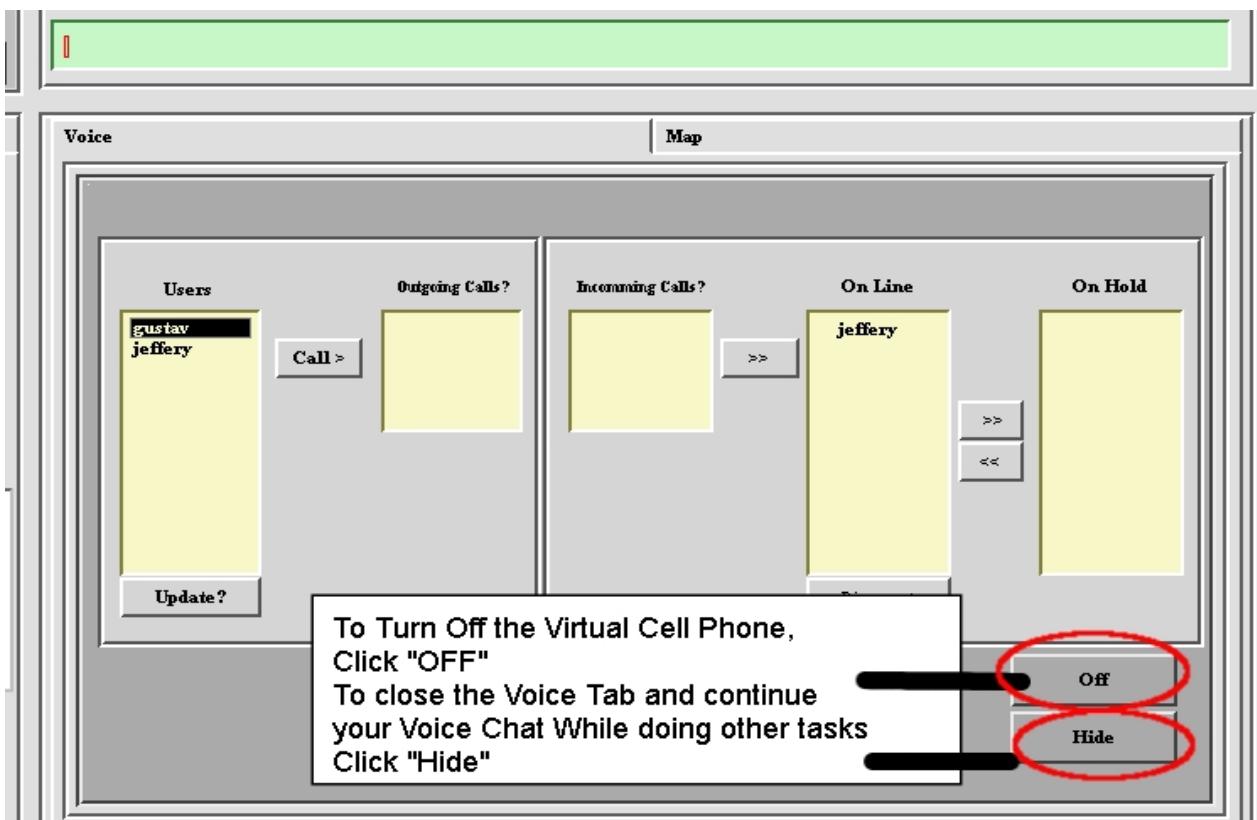
- To see who you are currently speaking to, see the **Active members** box.
- To see users who are currently present in the room, but who might or might not use the Room Based Call, see the **All Room Members** box.

## ***Hiding the Room Based Call Screen***

At any time, it is also possible to “**Hide**” the **Room Based Public Conference call screen** so that you can continue performing other tasks. For instance, while talking to somebody, you want to move your avatar or work on a file. In this case it is easy to *Hide* the Room Based Public Conference call Screen so that you can return to the 3d Navigation area.

To hide the Virtual Cell Phone Organizer Screen, Simply do the following:

***Click the “Hide” button in the Virtual Cell Phone Organizer Screen to hide the Room Based Call screen.***



## Quicklist Voice Chat

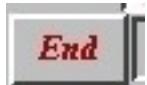
### *Turn On/Off Voice Chat*

Action	Action
Voice Chat is Turned ON: 	Voice Chat is Turned OFF: 

### *Making Quick Phone Calls*

Action 1	Action 2	Action 3
Select Receiver of Call in Dropbox 	Click "Talk" to Talk to that User 	Wait for Receiver to Answer Your Call

### *Ending Quick Phone Calls*

Action
To End any Quick Phone Call Chats, Press "End" 

## *Making Virtual Cell Phone Calls to single and multiple users*

Action 1	Action 2	Action 3	Action 4
Turn on Virtual Cell Phone  	Select Receiver of Call in Virtual Cell Phone Organizer Screen  [Select Receiver]	Click "Call" to talk to user  	Wait for Receiver to Answer Your Call

## *Ending All Calls/Turning OFF Virtual Cell Phone*

Action
Click "OFF" to end <u>ALL</u> Voice Chats  

## *Hiding the Virtual Cell Phone*

Action 1	Action 2
To hide the Virtual Cell Phone Organizer Screen click "Hide"  	Continue with your other tasks

## *Making Room Based Calls*

Action 1	Action 2
<b>Click on the Room Based Public Conference Function</b>  	<b>Voice Chat with Current People in the Room who also turned on the Room Based Function and are listed under “Active Members”</b>

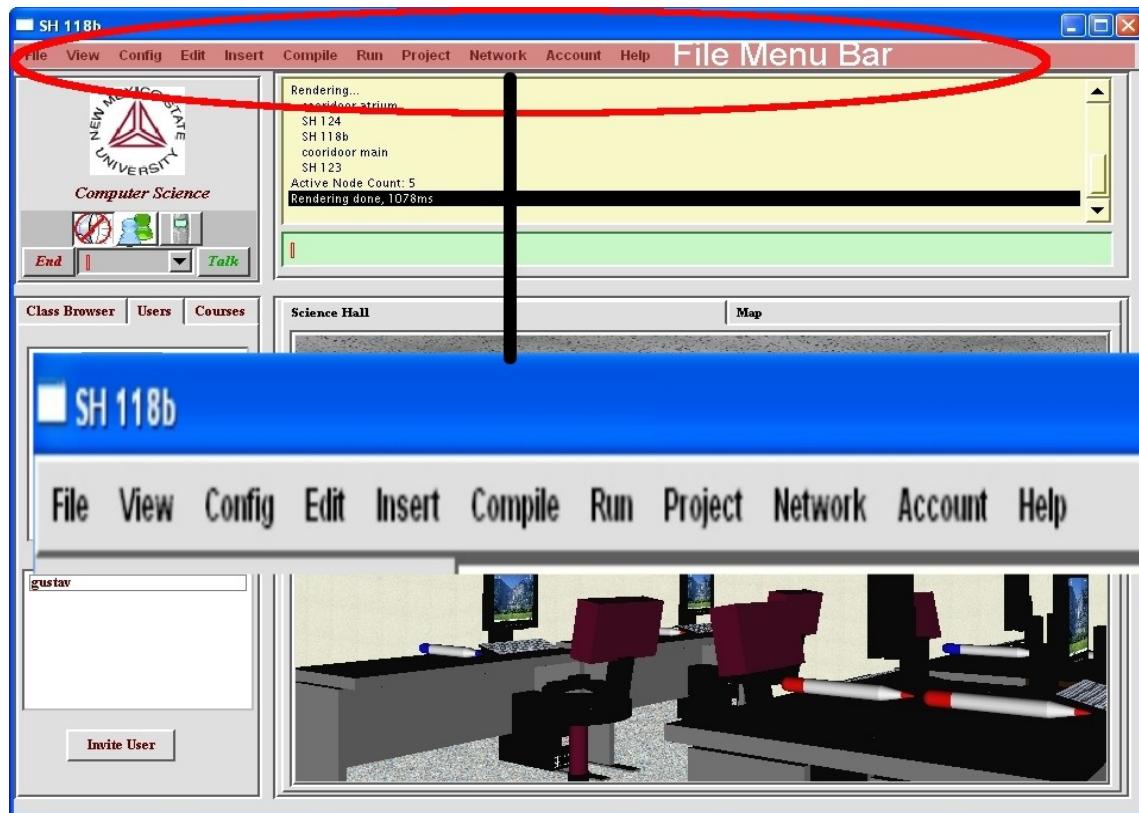
# **Chapter 8: Using the File Menu Bar to Create projects**

## **Overview of Chapter**

The **File Menu Bar** is a key component of working in CVE. Generally, it lets you create and modify project files, run and compile these files, as well as change your avatar and account options, as well as the way various items are displayed in the CVE interface. The File Menu Bar also lets you create a variety of different programs using C/C++/Java and Unicon, which you can then share and work on with others using the **Unicron Integrated Development Environment** (for more on this see the next chapter ).

**NOTE:** The File Menubar lets you do the following things:

- **Create/Open/Close/Save Files and Projects**
- **Exit CVE Configure the size of various elements of the screen**
- **Create, Run, Compile Java/C/C++ and Unicron Files**
- **Add pre-created Unicon code into your files/projects**
- **Connect/Disconnect to the Server**
- **Configure Account/Avatar Options**
- **Consult Help Guides and Guidelines**



For a quick idea of all of the functions see the following overview:

**FILE:** Open/ Close/ Save Files / Print/ Save Chat Transcripts / Take Screenshot/ Exit

**VIEW:** Change the size of various screen windows

**EDIT:** Cut/ Copy/ Paste/ Select All/ Find and Replace/ Go to Line

**INSERT:** Insert precreated Procedure/ Class/ Method Unicon Code

**COMPILE:** Make Executable/ Compile Only/Compiler Options

**RUN:** Run Program

**PROJECT:** Create A New/ Open an existing C/C++/Java/Unicon Project/ Compile a Project / Make Clean / Make Clean All

**NETWORK:** Connect/Disconnect From the Server

**ACCOUNT:** Change Password/Account/Avatar/Face

**HELP:** User Guide /Key Commands / About Unicron Version

**NOTE:** Some of the items of the File Menu Bar are also contained in the IDE toolbar as icons. Next to accessing these functions in the **File Menu Bar**, some of these functions can also be entered using the **IDE toolbar** (*the toolbar that appears when you open a new file*). Hence, below these functions are listed using the File Menu Bar route. An extra icon will be given for each function if this function is **also** accessible in the IDE toolbar.

## Creating your program files

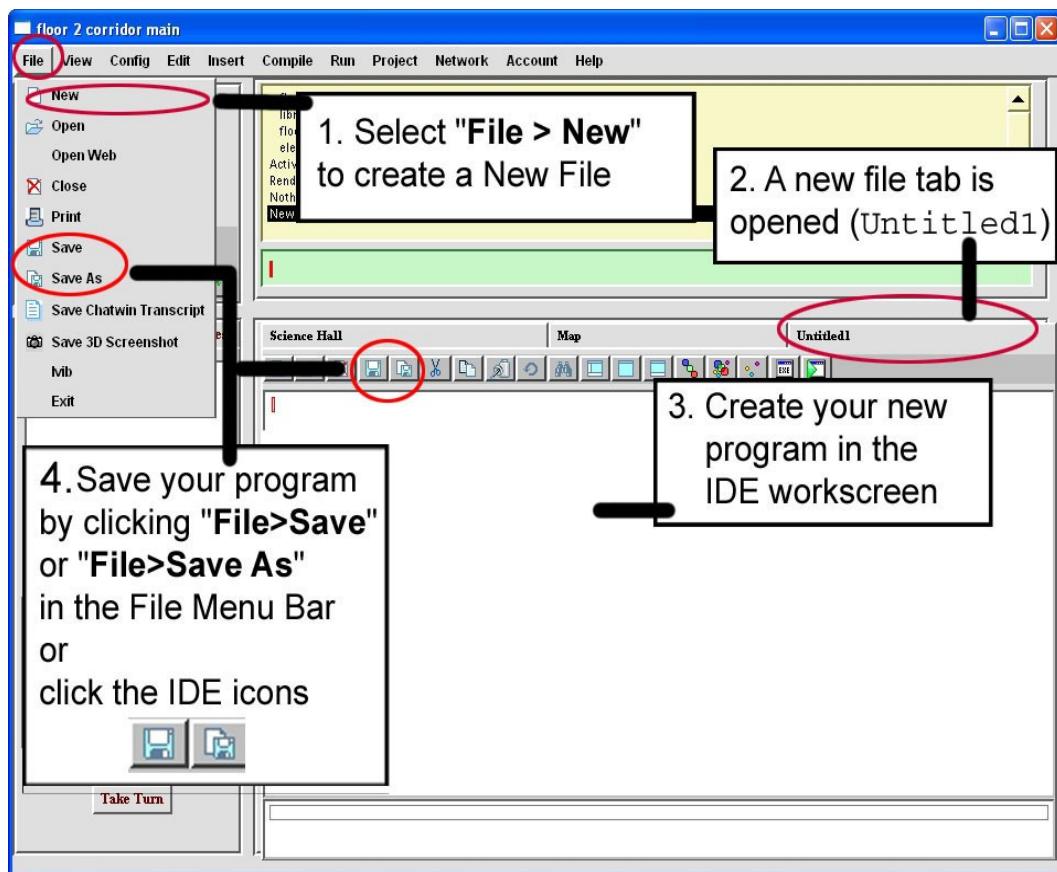
In CVE it is possible to create, save and open your program files. Since CVE lets you create C/C++, Java and Unicon programs, you can create files and applications for these programming languages. These steps can be done by accessing the **File Menu Bar**.

### *Creating A File*

Action	File Menu Bar Item	IDE icon
Create a new file	<a href="#">File &gt; New</a>	

**1. In order to create a new file, access the File Menu Bar Item “File>New”**

A new Tab “**Untitled 1**” will be opened in the **3d View Area** to indicate that you are creating a new file. Contained in this Tab is the IDE workscreen which lets you program your file.



**2. The IDE workscreen will appear, and you can start writing your program**

**3. Save your file by clicking on “File > Save” or “File > Save As” and naming your file**

In order to save files in either C/C++, Java or Unicon format, you will need to use the extension associated with that programming language. Below is an overview of these extensions:

Unicon Files	[Filename].icn
C C++	[Filename].c [Filename].cpp
Java	[Filename].java

It is also possible to open a new file when working in the IDE by pressing the icon for “**New file**” in the **IDE toolbar**.

## *Opening a File*

Action	File Menu Bar Item	IDE icon
<i>Open an existing file:</i>	<b>File &gt; Open</b>	

In order to open a file in a directory that you have created, you can use the “File > Open” or IDE icon.

**1. To open a file, click on “File > Open”, select the file, and click “Open” to open the file selected.**

## *Saving a File*

It is important to save your files often to avoid losing work in case of a crash. It is possible to save your work by simply clicking on “File > Save” or the IDE icon for save. If you are saving a new file, you will be asked to specify the name and the directory under which you want to save the file. If saving an existing file, the file will be saved under its original name.

### **Save:**

Action	File Menu Bar Item	IDE Icon
<i>Save a file</i>	<b>File &gt; Save</b>	

**To save your file, click “File > Save” in the File Menu Bar or click the IDE icon**

It is also possible to use “Save As” to save your file under a specific name in a specific directory.

### **Save As:**

Action	File Menu Bar Item	IDE Icon
<i>Save a new file</i>	<b>File &gt; Save As (specify location and name)</b>	

**To specify the name and location of your file, click “File > Save As” or click the IDE Icon**

## ***Exiting a File***

At any time, it is possible to close the File Tab and return to the 3d Area or the Map Tab. It is a good idea to save your work before, because this will not save your work automatically.

### **Save and Close a File:**

Action	File Menu Bar Item	IDE Icon
<b>Save and Close a file</b>	<b>1. File &gt; Save</b> 2. 	<b>1.</b>  <b>2.</b> 

**To close a File Tab and save your file, first save your file, and then press the IDE icon to close**

or

### **To Exit without Saving a File:**

Action	IDE Icon
<b>Exit a file without saving</b>	

**To Exit a file without saving it, simply press the IDE icon at any time**

## **Exiting CVE**

At any time, you can also exit CVE by clicking “**File > Exit**”. Make sure to save your files.

Action	File Menu Bar Item
<b>Exit CVE</b>	<b>File &gt; exit</b>

**To Exit CVE at any time simply click “File > Exit”**

## **Editing your file**

CVE also comes equipped with regular file editing capabilities such as **Cut**, **Copy**, and **Paste** that will allow you to delete, copy, and paste selections of your code. In addition, CVE also has **Select All**, **Find** and **Replace**, and **Go To Line** functions that allow you to select all

portions of your program, find and replace specific words and code, and the ability to jump to a particular line in your code. All of these functions will help you edit your programs with ease.

## *Cutting, Copying and Pasting*

Action	File Menu Bar Item	IDE Icon
<b>Cut</b>	<b>Edit &gt; Cut</b>	
<b>Copy</b>	<b>Edit &gt; Copy</b>	
<b>Paste</b>	<b>Edit &gt; Paste</b>	

### **To Cut:**

*In order to Cut specific portions of your program, highlight (left mouse click and drag over) the text you want to cut, and select “Edit > Cut” or the IDE Icon*

### **To Copy:**

*In order to Copy specific portions of your program, highlight (left mouse click and drag over) the text you want to copy, and select “Edit > Copy” or the IDE Icon*

### **To Paste:**

*Copy the portion of text you want to paste, and position your curse in the place where you want to paste and select “Edit > Paste” or the IDE Icon for Paste.*

## *Select*

The “**Edit > Select All**” function lets you select all of the text in your File Tab. This is handy if you want to copy, cut, or paste all of your code. To select parts of your code, left mouse click hold and drag over your code until the code is highlighted.

### **Select:**

Action	User Action
--------	-------------

## Select

Left Mouse Click (Hold) + Drag your code to select parts of your code

**To select a specific part of your code, Left Mouse Click and Hold + Drag over your code to select that part**

## Select ALL:

Action	File Menu Bar Item
Select All	<a href="#">Edit &gt; Select All/</a>

**To select ALL of your code, go to “Edit > Select All” in the File Menu Bar**

“Select All” lets you easily select all of your text in order to copy or cut it.

## Find and Replace

The **Find** and **Replace** functions let you find pieces of code quickly in order to alter or replace these. This is ideal for finding strings in your programs.

## Find:

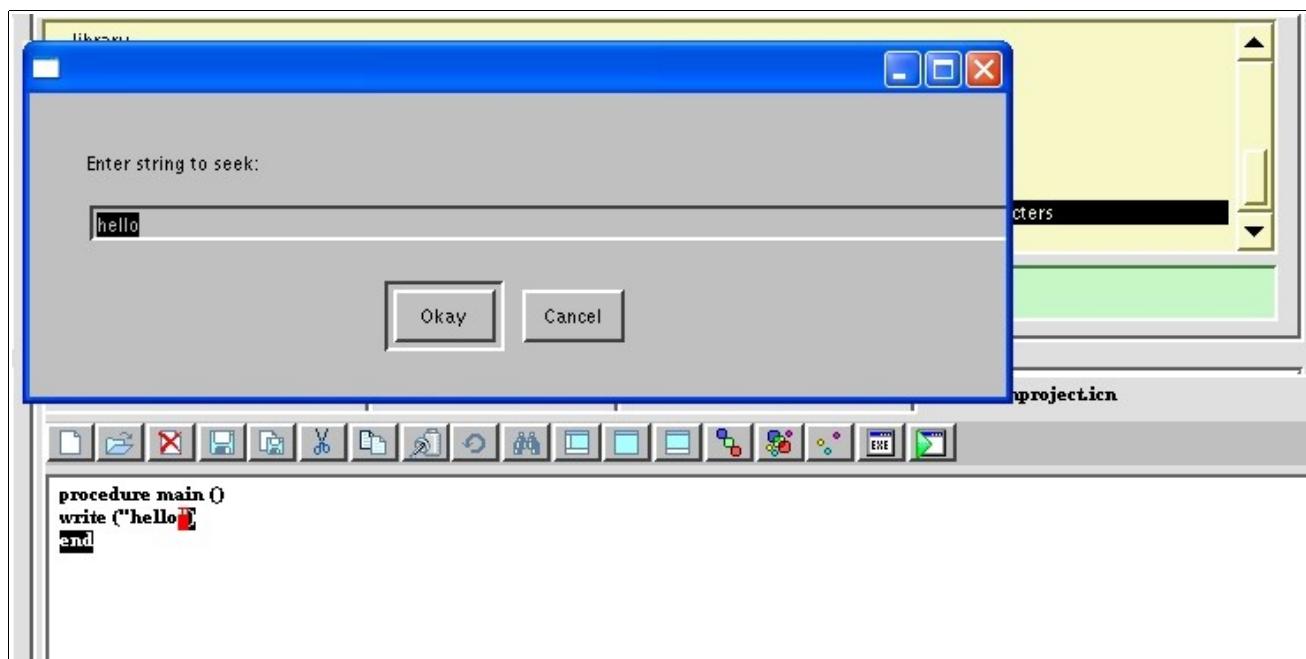
Action	File Menu Bar Item	IDE Icon
Find	<a href="#">Edit &gt; Find/</a>	

**1. To Find a specific piece of code, in the File Menu > Bar Select “Edit > Find” or click the IDE Icon.**

**2. A new window will open asking you to “Enter String to Seek”**



**3. Fill in your search item and select “Okay” to find this code in your program**



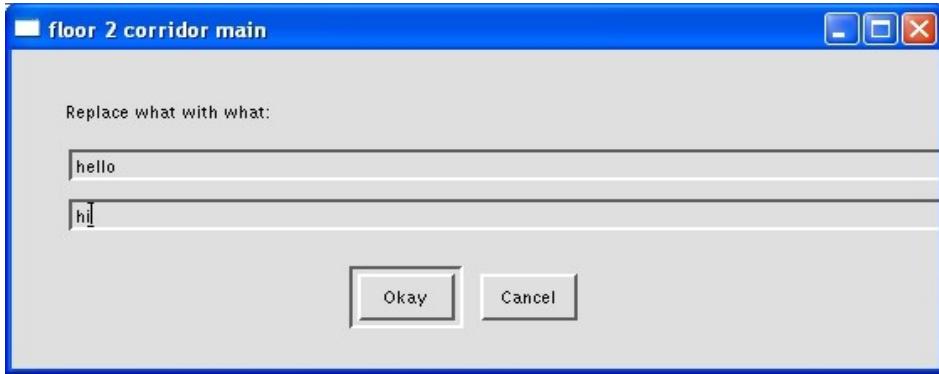
The **Find** function is handy if you simply want to find a specific piece of code or if you need to change that code.

**Replace:**

Action	File Menu Bar Item	IDE Icon
<b>Replace</b>	<a href="#">Edit &gt; Replace</a>	

**1. To replace code, select Edit > Replace**

**2. A new window will open and ask you “Replace what with what:” and ask you to fill in your original code and the new code**



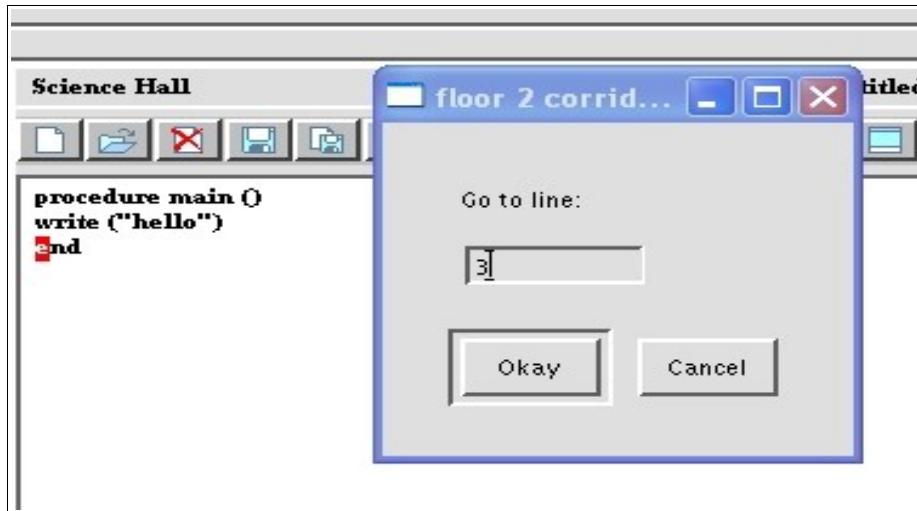
- 3. In the first entry box, enter the original code you want to replace**
- 4. In the second entry box, enter the new code**
- 5. Select “Okay” to replace the original code with the new code**

## ***Go to Line***

Action	File Menu Bar Item
<b>Go to Specific Line</b>	<b><i>Edit &gt; Go to Line</i></b>

The “Go To Line” function on the File Menu Bar lets you go to a specific line in your code. For instance, if you want to go to a specific line to fix an error, this function lets you go directly to that line and sparing you the hassle of finding it yourself by having to scroll through your code.

- 1. To go to a specific line in your code, select “Edit > Go to Line”; a new window will appear**
- 2. In the new window, type in the number of the line you want to go to**



**3. Click on “Okay” to be taken to the line you entered**

## ***Inserting Unicon Code in your file***

CVE also lets you insert premade Unicon Code in your file for **Procedure**, **Class** and **Method**.

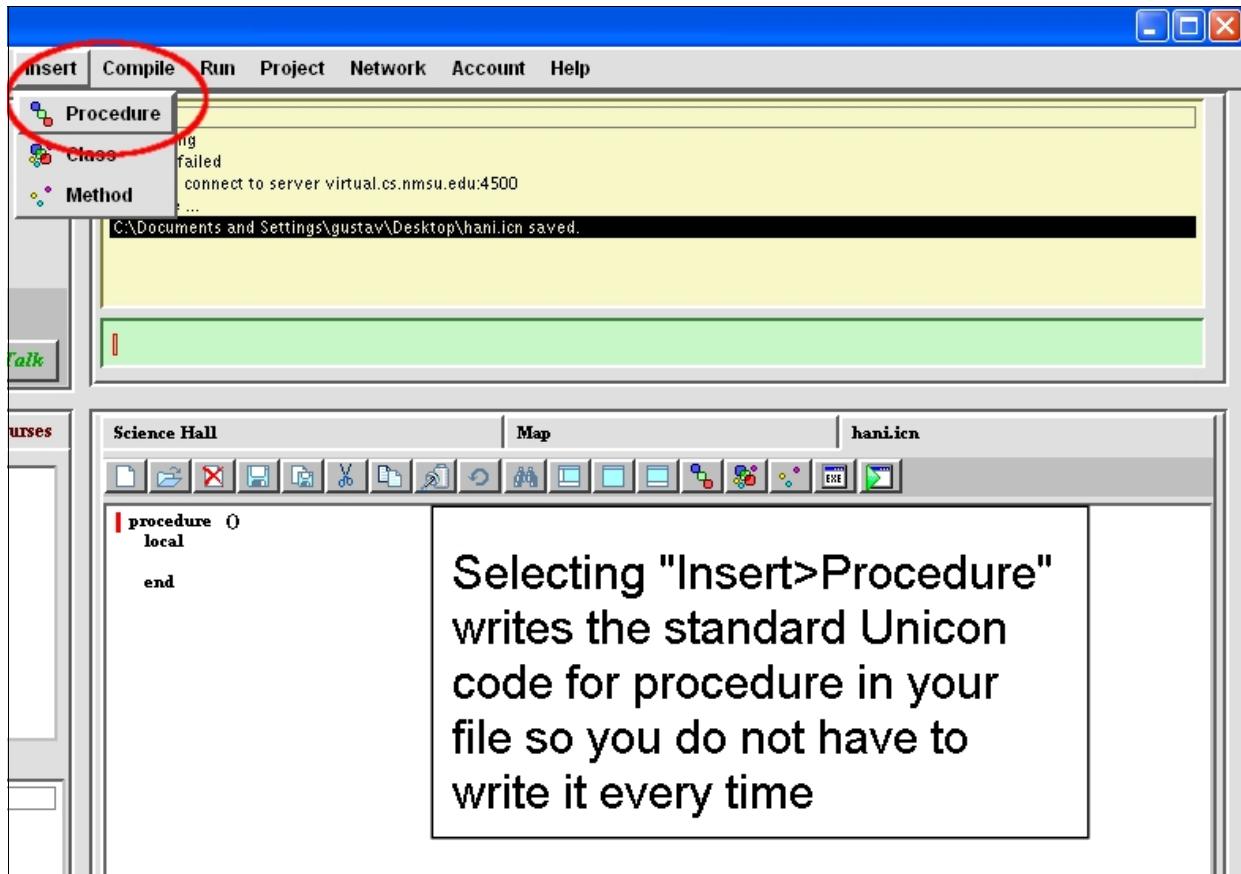
**NOTE:** The Insert item is specifically geared towards Unicon, because it lets you insert standard code in Unicon for **Procedure**, **Class** and **Method**. Since these are standard in Unicon code, they will not work when you are creating Java and C/C++ programs!

Using Insert spares you the task of having to write the same lines of Unicon code, instead letting you focus on your program without needing to write the standard code for these items.

The Insert items lets you add standard code to your program. Hence, every time you have a file open, and press **Insert>Procedure**, the following code will be inserted in your Unicon program:

```
procedure ()  
local  
end
```

This code is standard code for a procedure in Unicon. Since this code is Unicon specific, you can only use the Insert function when you are writing a program in Unicon.

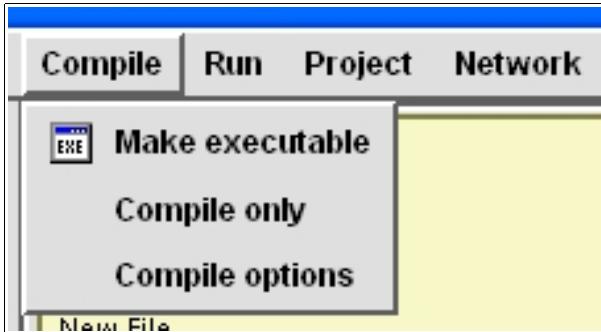


**To insert precreated Unicon Code for Procedure, Class, Method, in the File Menu Bar  
Select Inser > Procedure , Class, Method or the IDE Icon**

Action	File Menu Bar Item	IDE Icon
Add precreated Unicon code for Procedure in your program	<a href="#">Insert &gt; Procedure</a>	
Add precreated Unicon code for Class in your program	<a href="#">Insert &gt; Class</a>	
Add precreated Unicon code for Method in your program	<a href="#">Insert &gt; Method</a>	

## Running and debugging your files

After creating and saving your file, you can also run your files to see if they contain any errors or if they work. The **Compile** item in the **File Menu Bar** lets you compile your programs and check them for errors, as well creating executable files. In addition, you can configure various options for the compiler to run Java, C/C++ and Unix code.



### ***Creating executables***

Action	File Menu Bar Item	IDE Icon
<b>Create .exe file so you can run your program</b>	<b><a href="#">Compile &gt; Make executable</a></b>	

***In order to create an executable only, select “Compile > Make Executable” or click the IDE Icon***

This will only create a .exe file; it will not run your program. To do so, follow the instructions for running your program below.

### ***Compiling your programs:***

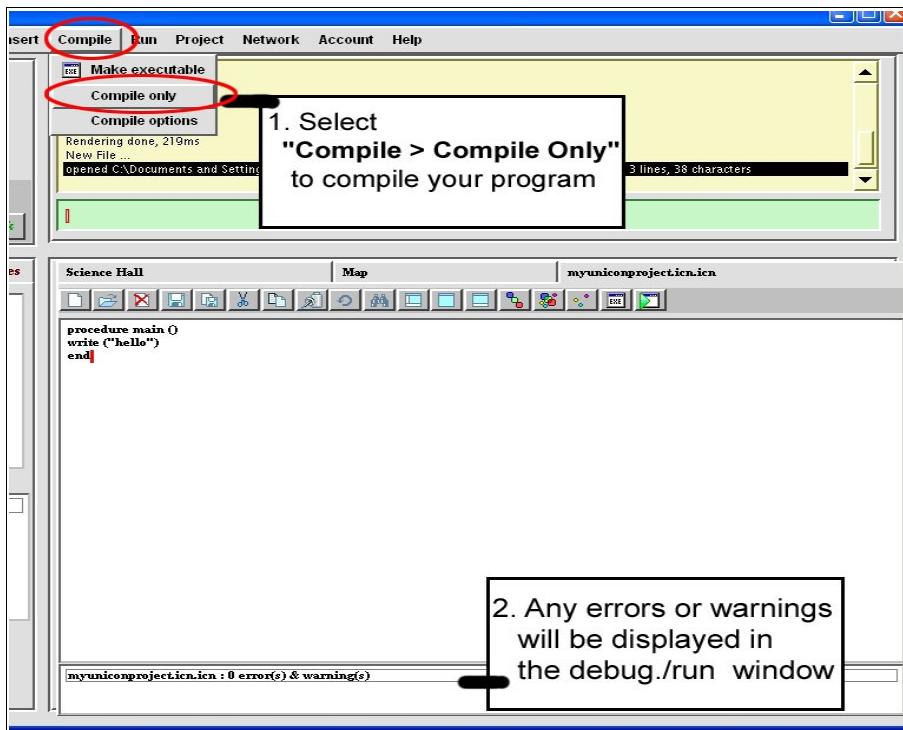
Action	File Menu Bar Item
<b>Check for errors in your program and compile</b>	<b><a href="#">Compile &gt; Compile Only</a></b>

For checking errors in your program without running it, you can use the “**Compile > Compile Only**” function

**1. Save your file by selecting “Files > Save” or “File > Save As”**

**2. Select “Compile > Compile Only” to compile your file**

**3. Check for errors**



**4. In case of errors, you will automatically be taken to the error line in your program, with a message of the error in the debug/run window**

#### No errors:

If you have no errors, the following message will be displayed in the debug / run window saying:

“0 error(s) & warning(s)”

#### Errors:

In case you have any errors, the message will display the number of errors and take you to the error in the code.

For instance:

“2 error(s) & warning(s)” means that there are 2 errors.

The screenshot shows the Unicon IDE interface. The top menu bar includes 'Science Hall', 'Map', and the project name 'myuniconproject.cn'. The toolbar contains various icons for file operations. The main editor window displays the following code:

```
procedure main()
write ("hello")
end
```

A red circle highlights the closing parenthesis '}' in the code. A callout box points to this error with the text: '1. If an error is discovered after compiling you will automatically be taken to the error'.

Below the editor, the status bar shows the output of the compilation process:

```
Parsing myuniconproject.cn:
myuniconproject.cn:3: # ";" : unclosed parenthesis
****myuniconproject.cn - 2 error(s) & warning(s)
```

A black arrow points from the status bar to another callout box containing the text: '2. Error warning and diagnosis of error ("Unclosed parenthesis")'.

## *Running your Programs*

Action	File Menu Bar Item	IDE Icon
<i>Execute your program</i>	<i>Run &gt; Run Program</i>	

After creating your program and compiling and debugging it, you can also test your program by using the **Run>Run Program** function

**Use *Run > Run Program* to run your program**

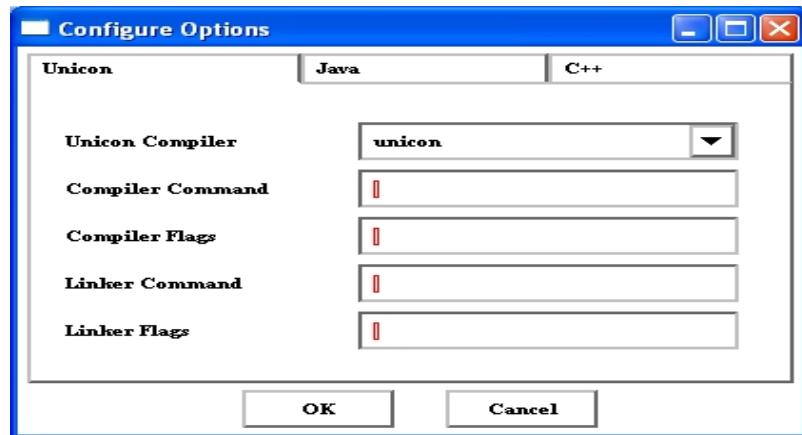
## *Configuring your compiler:*

The “**Compile > Compile Options**” lets you configure your compiler options for programs in Unicon/C/C++ and Java.

Action	File Menu Bar Item
<i>Configure Compiler options for Unicon/C/C++ and Java</i>	<i>Compile &gt; Compile Options</i>

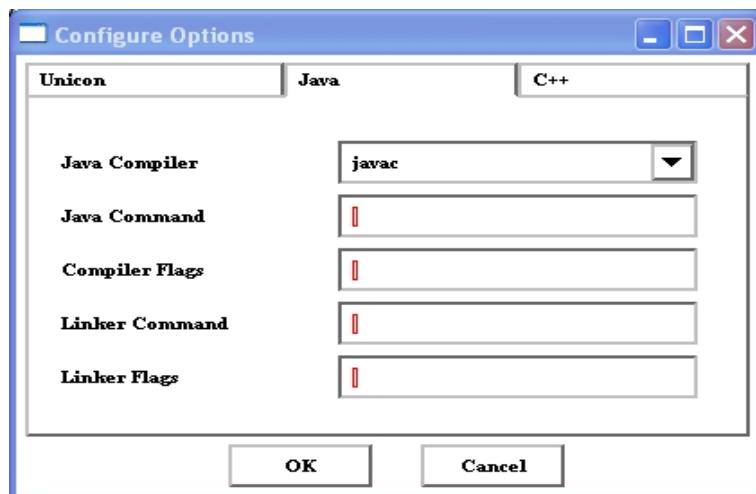
### Unicon Compiler Options:

The Compiler Options for Unicon lets you configure the Compiler (Unicon or Wincont), as well as let you configure the **Compiler** and **Linker** Flags and Command. By default, Unicon is selected as compiler.



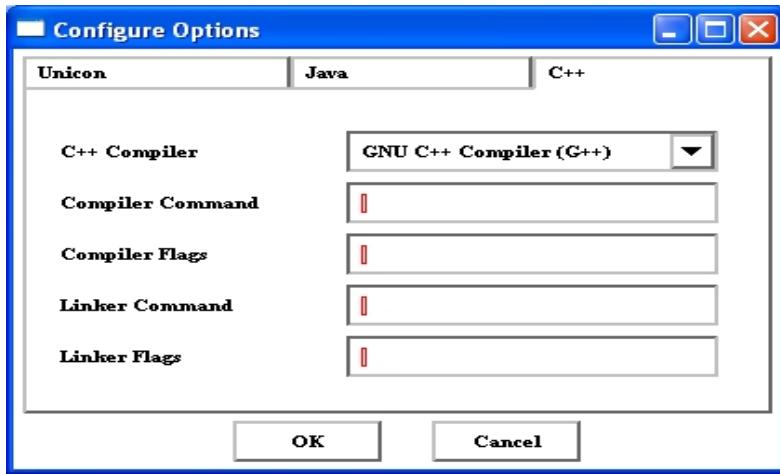
### Java Compiler Options:

The Compiler Options for Java lets you configure the **Compiler** and **Linker** Flags and Command. By default, **Javac** is always selected as compiler for Java programs



### C/C++ Compiler Options:

The Compiler Options for C/C++ lets you configure the **Compiler** and **Linker** Flags and Command. By default, **GNU C++ Compiler (G++)** is selected as compiler for C ++ programs; However, **GNU C Compiler (GCC)** can also be selected if you are developing C programs.



Many of these options are for advanced users who want to configure their compilers. For simple programs, you should keep the default settings.

## Configuring your workspace

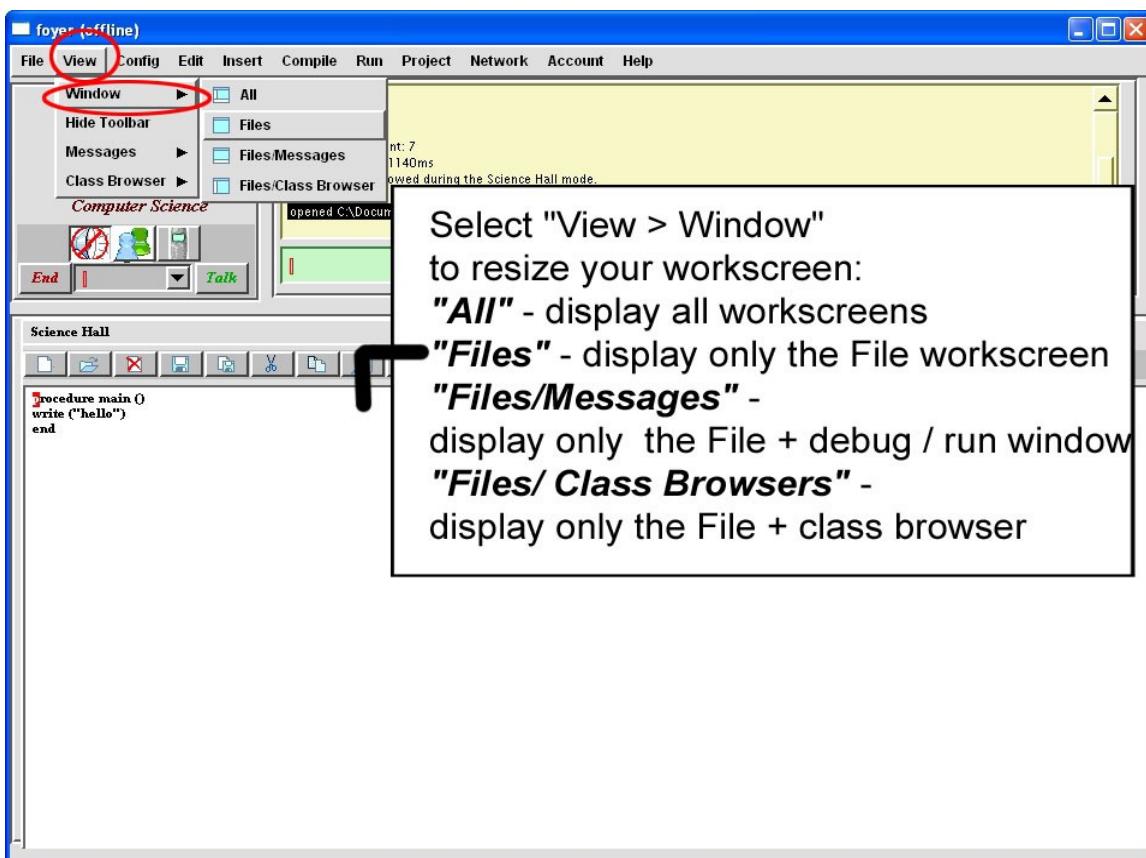
In CVE, it is possible to configure your workspace for maximizing your screen real estate, allowing you to focus on tasks at hand. Using the “***View > Window***” function, you can select a screen setup that will let you focus on particular elements on your screen by minimizing others. Hence, when creating a file, you might want to focus on the File Workscreen and the Debug / Run window, and thus you select “***View > Window > Files / Messages***”. Or, perhaps you want to focus on just your code, so you select “***View > Window > Files***” so that you only see your File workscreen.

**NOTE:** In CVE, it is possible to configure your workspace for maximizing your screen real estate, allowing you to focus on tasks at hand by minimizing or closing non-essential screens. At any time, it is possible to switch back to the original configuration with all workwindows on your screen by selecting “***View > Window > ALL***”

## *Changing the Window size*

Action	File Menu Bar Item	IDE Icon
--------	--------------------	----------

<i>Display All Windows</i>	<a href="#">View &gt; Window&gt; ALL</a>	
<i>Display File workscreen only</i>	<a href="#">View &gt; Window&gt; Files</a>	
<i>Display File workscreen and Run /Debug Window</i>	<a href="#">View &gt; Window&gt; Files / Messages</a>	
<i>Display File workscreen and Class Browser</i>	<a href="#">View &gt; Window &gt; Files Class / Browser</a>	



**Display ALL Windows (default):**

**To display all windows, select View > Window > All**

**Display File workscreen only:**

**To display only the File workscreen (pictured above), select View > Window > Files**

**Display File and Debug / Run Window only:**

**To display only the Files and Debug / Run Window, select View > Window > Files /Messages**

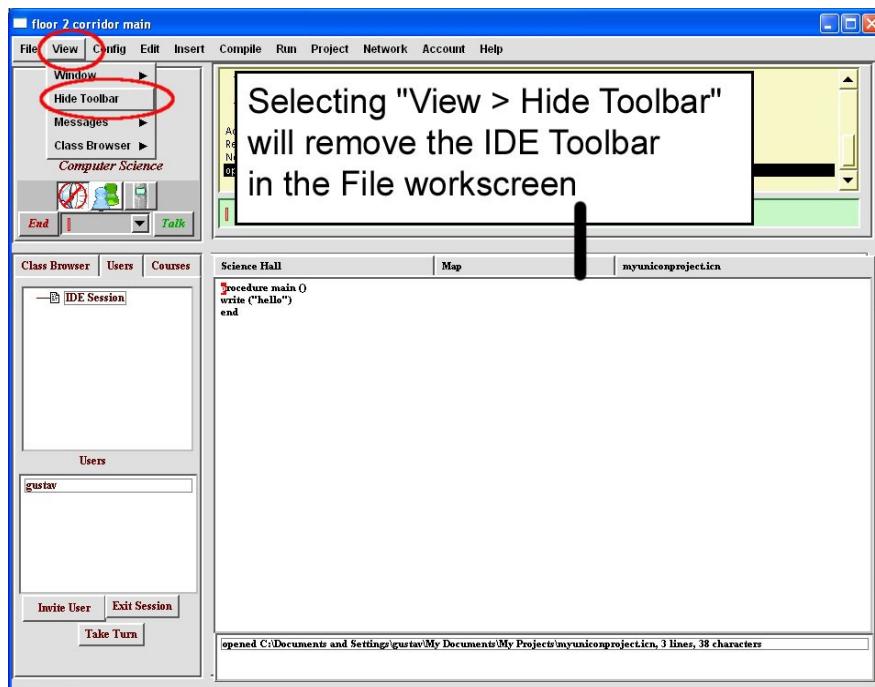
**Display File and Class Browser only:**

**To display only the File and the Class Browser, select View > Window > Files / Class Browsers**

### ***Hiding or Showing the IDE toolbar***

Action	File Menu Bar Item
<i>Hide or Show the IDE toolbar above a file that you opened or created</i>	<b><i>View &gt; Hide/Show Toolbars</i></b>

**NOTE:** By default, the IDE Toolbar is opened automatically when you open a file. It is possible to hide the IDE Toolbar, by selecting “**View > Hide Toolbar**” so you have more room for your filescreen. To show the IDE toolbar again, select “**View > Show Toolbar**”.



**Hide the IDE toolbar:**

*To hide the IDE Toolbar, select “View > Hide Toolbar”*

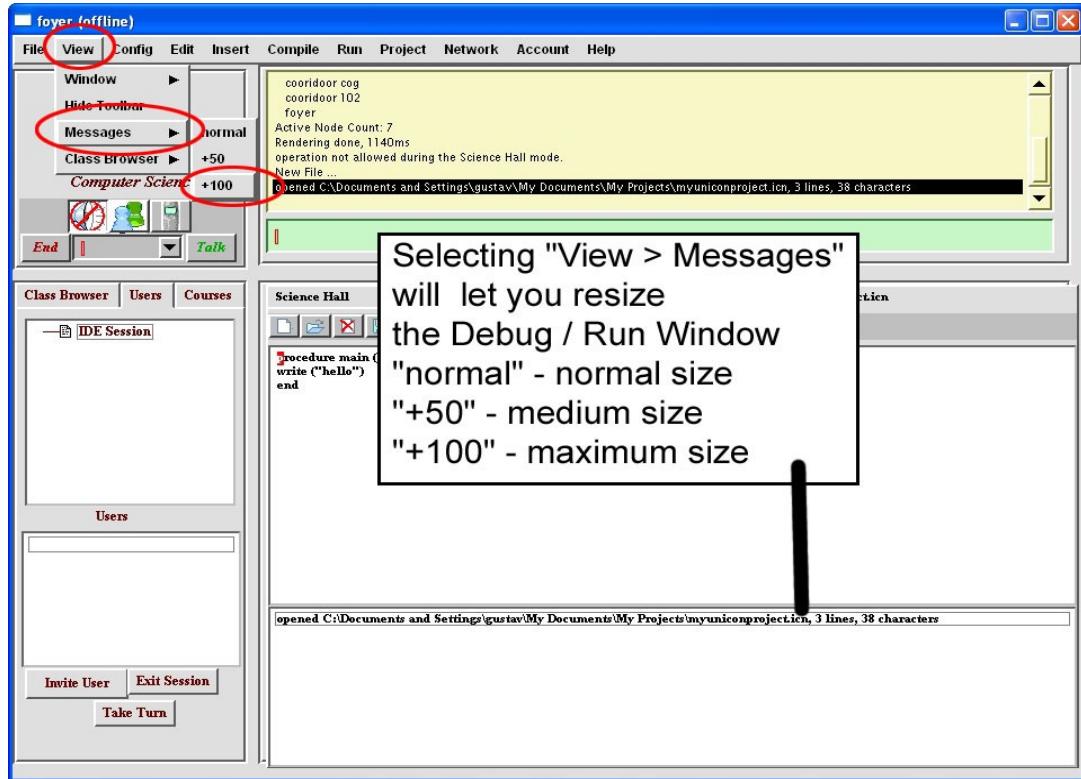
**Show the IDE Toolbar:**

*To show the IDE Toolbar, select “View > Show Toolbar”*

## *Changing the size of the Debug/ Run Window*

Action	File Menu Bar Item
<i>Change the size of the Debug / Run Window</i>	<a href="#">View &gt; Messages</a>

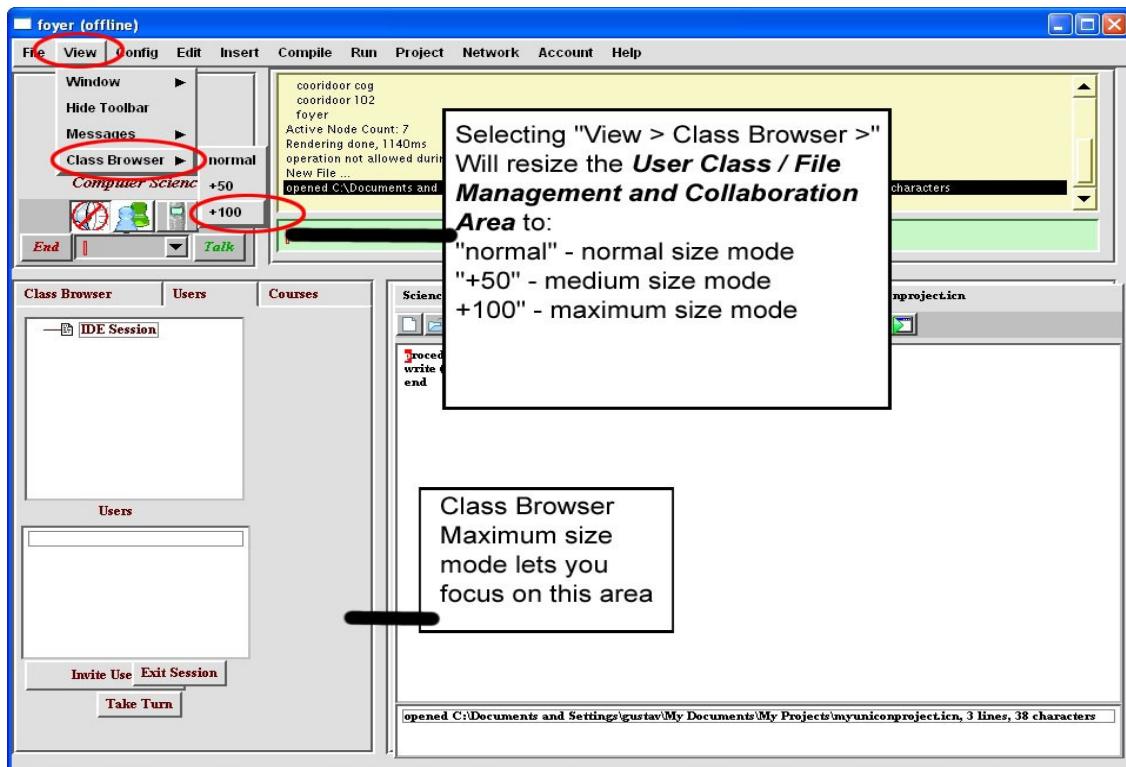
**NOTE:** When compiling and debugging your programs, it is a good idea to expand your **Debug / Run window**, so you can see your program messages. Whereas normal size only gives you a couple of lines, expanding the Debug / Run window to **medium** or **maximum** size will allow you a better view of the messages contained in this window.



## *Changing the size of the User Class/File Management & Collaboration Area*

Action	File Menu Bar Item
<i>Expand the User Class / File Management and Collaboration Area</i>	<b><i>View &gt; Class Browser</i></b>

It is also possible to change the size of the Collaboration area by using “**View > Class Browser**” and selecting either a medium or maximum size.



## Connecting/Disconnecting to the Network

At times, you will probably want to get on with your work in CVE without getting interrupted by other users. There are two possibilities for working in CVE without being visible to other

users.

1. You can use the standalone version of CVE, which lets you log in to CVE without connecting to the network

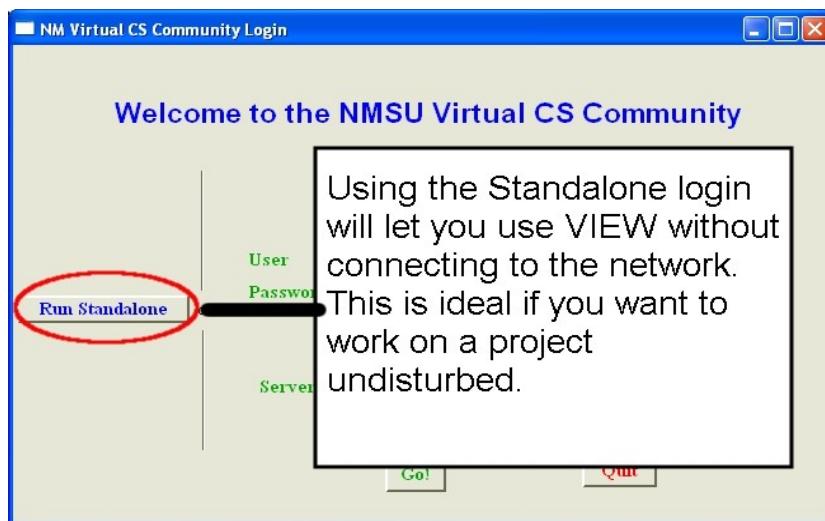
or

2. You can disconnect while already logged into CVE by going to the *Network > Disconnect* in the File Menu Bar.

**NOTE:** It is possible to do your work uninterrupted in CVE by using the “*Network > Disconnect*” function from the File Menu Bar or, when starting CVE, using the **Run Standalone** option at the login window. This especially useful when you want to focus on your own work and do not want to interact with other users.

#### Logging in to CVE without connecting to the Server:

**To use CVE without connecting to the server initially, select the “Run Standalone” function at the login window.**



Since you are not connected to the network, you will not be able to see the avatars of other users or be able to chat with them, but you will be capable of working on your projects in CVE and navigating the environment. You will also have a default avatar (as opposed to your own), since standalone mode does not require you to enter your username and password.

#### To Disconnect from the Network when logged in:

**NOTE:** By default, when you log in to CVE with your username and password, you will be

connected to the network. At any time, when you want to disconnect, you can do this by selecting “**Network > Disconnect**”

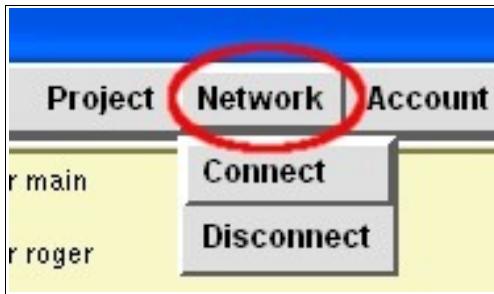
Action	File Menu Bar Item
<i>Disconnect to the server</i>	<b>Network &gt; Disconnect</b>

*When you have already logged into CVE using your username and password and want to disconnect from the network, select “Network > Disconnect”.*

**To Connect to the Network again:**

Action	File Menu Bar Item
<i>Connect to the server</i>	<b>Network &gt; Connect</b>

*In order to connect to the network, select “Network > Connect”*



## Changing your Account Information

In CVE it is possible to change the password you use to log in to CVE, as well as your user name and personal information such as your screen name and affiliation.

### *Changing your Password*

Action	File Menu Bar Item
<i>Change your password</i>	<b>Account &gt; Change Password</b>

*1. To change your password, select the Account > Change Password option in the*

**file menu bar**



**2. In the “Edit Your Password” window, enter your username, your old password and your new password and click “OK”**



That's it! If all things have gone well, you should have a message reading in the Chat Area/Message Window:

passwordchange():password change request for user [your username]

You can now use your new password when logging in to CVE!

**NOTE:** If by any chance you have lost your password, or you are having trouble logging in to CVE, contact the system administrator **jeffery@cs.uidaho.edu**

## *Changing your Registration Information*

Action	File Menu Bar Item
<i>Edit your user's email/username/first/last name and affiliation</i>	<a href="#"><b>Account &gt; Edit Registration</b></a>

In CVE it is also possible to change the Registration information you gave when you first created your avatar.

**1. To change your Register Information, select “Account > Edit Registration”**



**2. Fill in your Username and Password, and any information you want to change, such as FirstName, Lastname, EmailID and Institutional Affiliation, and click “OK”**

That's it! If all things have gone well, you should have a message reading in the Chat Area/Message Window:

```
changereg_info():registration information change requested for user  
[your username]
```

## Printing Your File

The File > Print item also lets you print file and file code, so that you can go over what you have just created

Action	File Menu Bar Item
<i>Print a file:</i>	<a href="#">File &gt; Print</a>

## Saving a Chat Session or Screenshot

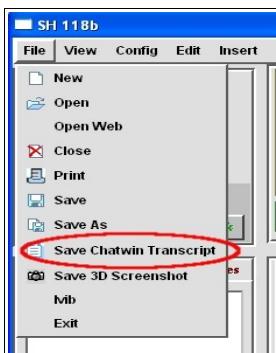
The “**File > Save ChatWin Transcript**” item in the File Menu Bar lets you save chats as .txt files so that you can refer to them later or remind yourself what was discussed in that particular chat. You can also Save a Screenshot by selecting “**File > Save 3D Screenshot**”.

**NOTE:** Saving your chats and taking relevant screenshots of moments in CVE will allow you to refresh your memory and refer to them later. Do make sure to ask permission from other users if you want to save their chat with you!!

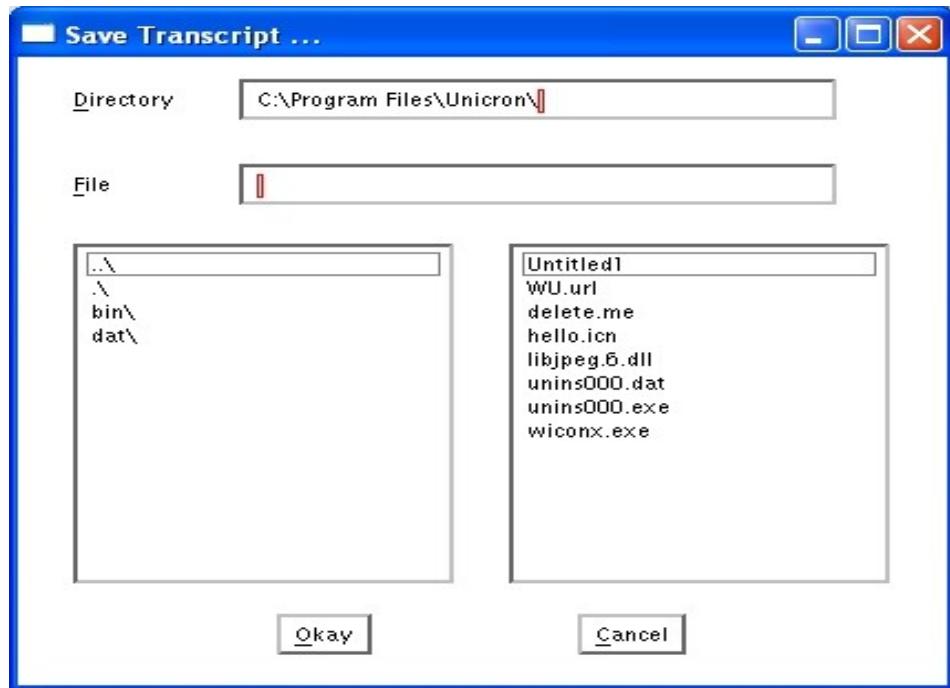
### *Saving a Chat Session*

Action	File Menu Bar Item
<i>Save a chat</i>	<a href="#">File &gt; Save ChatWin</a>

#### *1. In order to save a chat, select File > Save Chatwin in the File Menu Bar*



#### *2. In the “Save Transcript” window, select the directory and the filename (which should end in .txt), and click “Okay” to save the transcript*

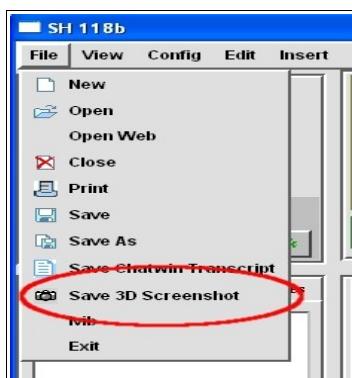


## *Saving a Screenshot*

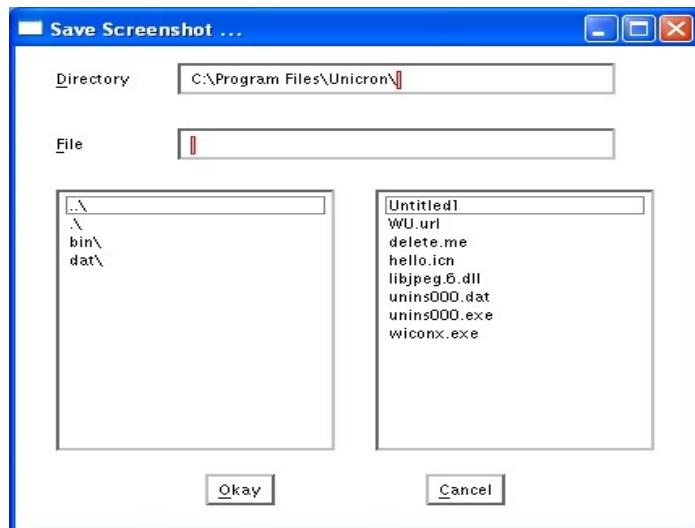
Action	File Menu Bar Item
Save a screenshot	<a href="#">File&gt; Save Screenshot</a>

It is a good idea to save a screenshot of your interactions in CVE so you can revisit this later. For instance, when your instructor gives you important information on the blackboard, you can take a screenshot to keep this information for reference.

### **1. To save a screenshot, select “File > Save Screenshot” in the File Menu Bar**



**2. In the “Save Screenshot” window, select the directory, name and extension (.jpg) that you want to save the screenshot as**



**3. Click on “Okay” to save your screenshot.**

## Getting Help

The Help item in the File Menu Bar provides you with a user guide that offers helpful tips in using CVE. Next to a manual, there is a command list for commonly used commands such as avatar movement, teleporting, and other function keys.

### *Opening the User Guide*

<b>Open User Guide</b>	<b><a href="#">Help &gt; User Guide</a></b>
------------------------	---

**To open the user guide, select Help > User Guide in the File Menu Bar**

The user guide can help you in case you have any issues in CVE.

## ***Displaying commonly used commands***

*Display a short list of commonly used commands in CVE*

***Help > Commands***

***To see a list of commonly used commands, select Help > Commands in the File Menu Bar***

**NOTE:** Commonly used keys for navigating through the environment, avatar movement, and social interaction are listed in “**Help > Commands**” in the File Menu Bar.

## ***Displaying your version of CVE***

*Display your version of CVE*

***Help > About***

***To display your version of CVE, select Help > About in the File Menu Bar***

It is important to know what version of CVE you are running, so that you can update to the latest version.

## ***Chapter 9: Creating a Project using the Integrated Development Environment***

CVE contains an IDE (integrated development environment) for creating Unicon, C/C++ and Java projects for Linux and Windows. The IDE is integrated directly into the CVE virtual environment and is available anytime, anywhere. This means that, from within the world, the user can build, compile, and run the program without having to exit the world and without stopping or upsetting the execution of other users' work.

This chapter will describe the following elements:

- **About the Integrated Development Environment**
- **Creating and Running your Projects Using the IDE Toolbar**
- **Managing your projects using the Project Manager**
- **Creating a Project in CVE**
- **Creating a New Project**
- **Opening an existing Project**
- **Saving a Project**
- **Running and Debugging a Project**

### **About the Integrated Development Environment (IDE)**

An Integrated Development Environment (IDE) is a software tool intended to make the process of writing programs easier. IDEs typically work as a component of the compiler environment. It allows editing program source code, compiling it with the compiler, fixing syntax errors, running it, and debugging it, all inside a single environment.

The CVE IDE is a simple Integrated Development Environment (IDE) for Unicon, C/C++, and Java on Linux and Microsoft Windows. It features a number of advanced programming facilities. The idea behind CVE IDE is to provide the virtual environment with a flexible and powerful programming tool with a user-friendly Graphical User Interface (GUI).

CVE contains a collaborative IDE (integrated development environment) that is integrated directly into the virtual environment and is available anytime, anywhere. This means that, from within the world, the user can build, compile, and run the program without having to exit the world and without stopping or upsetting the execution of other users' work. The IDE gives users the ability to work on a project in the virtual world individually, as well as share these files with other users for troubleshooting and feedback. This allows users to work on projects together and read each other's code by using the collaborative function of the IDE.

The CVE IDE is similar to other IDEs (for example Visual Studio; Borland C++). CVE's IDE features allow the user to:

- Open existing files/projects and create new files/projects.
- Compile, execute, debug and run programs
- Perform text editing with an easy-to-use and user-friendly text editor
- Find errors quickly by using the error-line jumping technique

- Manage their project structure by browsing project files/ moving directly to files/ methods/procedures

The CVE IDE also includes elements that make it different from other IDEs. Most importantly, the IDE is attached to the CVE Virtual Environment, allowing for collaboration and online synchronous user-to-user interaction through voice chat, text chat, and screensharing. The other element that makes CVE IDE different is that it supports three different languages (C/C++, Java and Unicon), and is suited to support programming, compiling and debugging programs written in these languages.

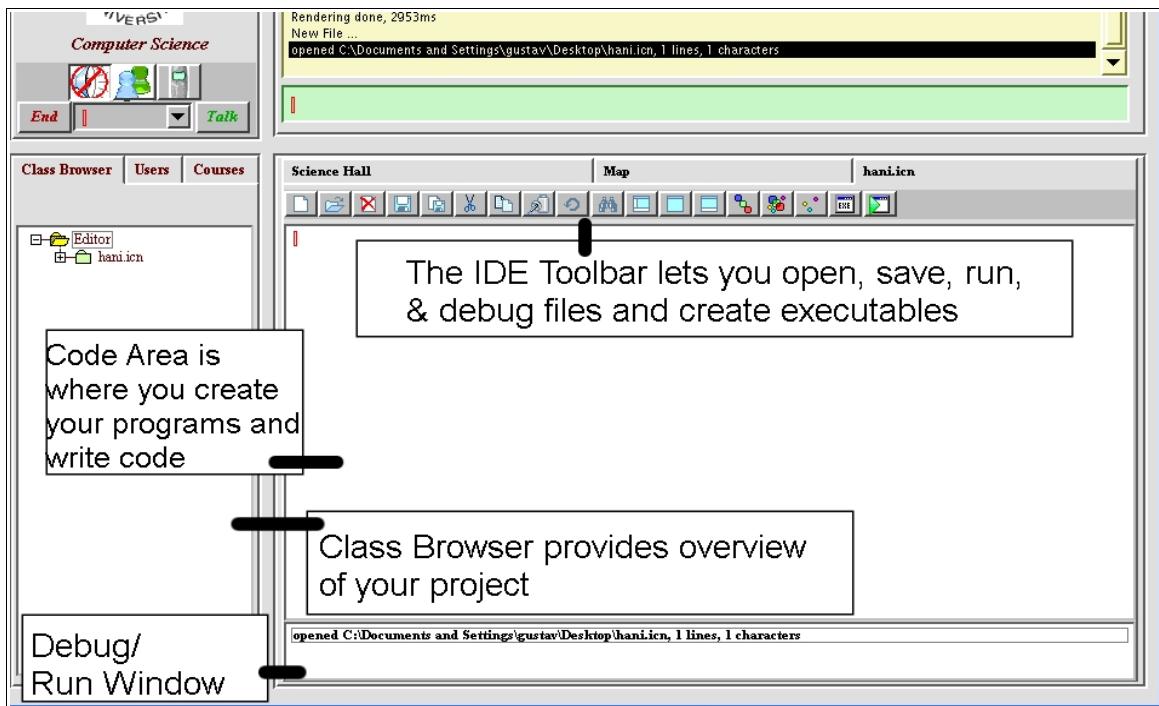


Figure 1: A view of CVE's IDE.

An image of the IDE is provided above. The IDE consists of four areas of importance:

- The **Code Area** is where you write your programs in either C/C++/Java or Unicon.
- The **IDE toolbar** lets you open, save, compile, debug and run files, create executable files, and cut, copy, paste and insert code. Many of these functions are similar to those found in the File Menu Bar.
- The **Class Browser Tab** (located in the Class/File Management and Collaboration Area), has multiple functions. It lets you see your project including files you have linked to your project. It also lets you share your files with other users by inviting other users through the **Users Tab**.
- The **Debug/Run Window** gives you diagnostic messages when compiling and running

your program.

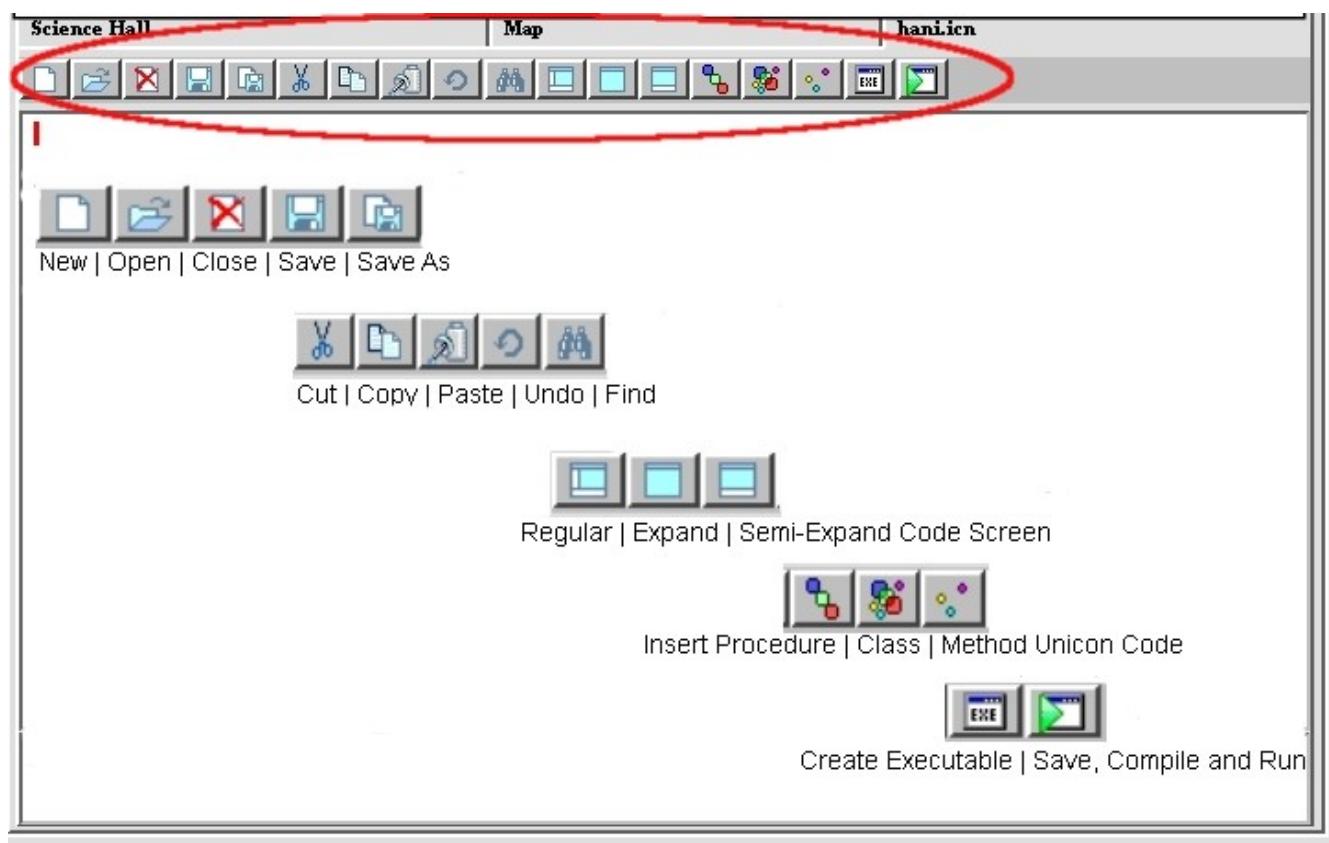
More in-depth explanations of how the CVE IDE works are described in the sections below.

**NOTE:** An **Integrated Development Environment** (IDE) is a software tool intended to make the process of writing programs easier by letting you edit, compile, fix syntax errors, run and debug program source code all inside a single environment.

The **Unicron IDE** lets people create, compile, run and debug code for Unicon, C/C++ and Java Projects, and share this code with others.

## Creating and Running your Projects Using the IDE Toolbar

The **IDE toolbar** lets you open, save, compile, debug and run files, create executable files, and cut, copy, paste and insert code. It also lets you maximize the size of your code screen by expanding it. Many of these functions are similar to those found in the File Menu Bar, but since they are in the IDE screen, these functions let you get on with your coding work without having to access these functions all the way at the top in the File Menu Bar.



## Managing your projects using the Project Manager

A Project is the collection of all the source files and the required settings for the compiler, assembler, and linker in order to compile and link a program. CVE's IDE has a simple and easy project management feature in the **Class Browser Tab** area that will help you set up your project in no time.



The Project Manager helps organize your source code and simplifies the application development process, by displaying a logical view of your project that you can refer to at any time. Projects consists of multiple files. It is important to keep track of your project files, and the CVE IDE lets you organize this in an easy-to-understand format that you can browse through.

Any application consists of various source files, associated header files, and required data files. These files (header and data files) are generally dependent on each other; thus to make the application work a link to these files is required. By creating a CVE IDE Project for any application, all the file dependencies are automatically handled and included within the project Makefile. This means that you can run your projects without needing to link them separately using command line strings.

The CVE IDE uses the standard tool make for C/C++ files. However, for Java applications generally, JDK (the Java Development Kit compiler) is used.

## COMPILERS

Project Types	Compiler
C/C++ Projects	g++ (Default compiler)

Unicon Projects	<b>Unicon</b>
JAVA Projects	<b>JDK Compiler</b>

## Creating a Project in CVE

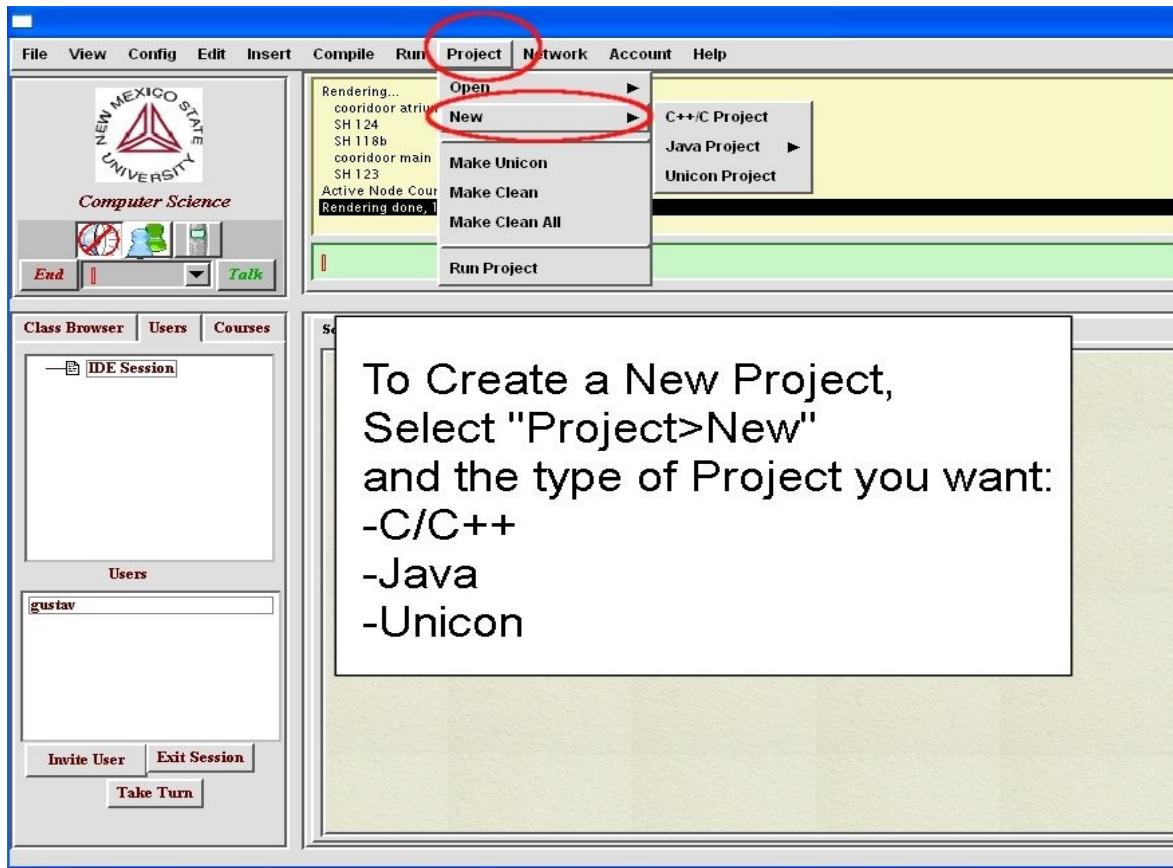
Generally, when you create a project in CVE, you will need to do the following:

- **Create a new Project file or Open an existing Project**
- **Choose type of project you want to create (C/C++, Java or Unicon Project)**

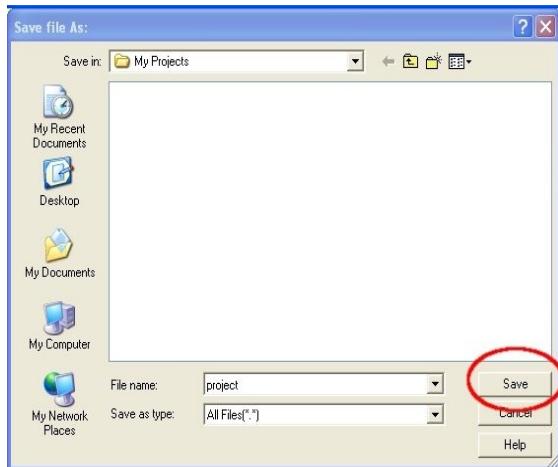
The first step to build programs in CVE is to create a new Project or open an existing project.

## Creating a New Project

*1. In the File Menu Bar, select “Project>New> and choose between C/C++, JAVA or Unicon Project*



## 2. Give your project file a name when prompted to Save File As and click “Save”



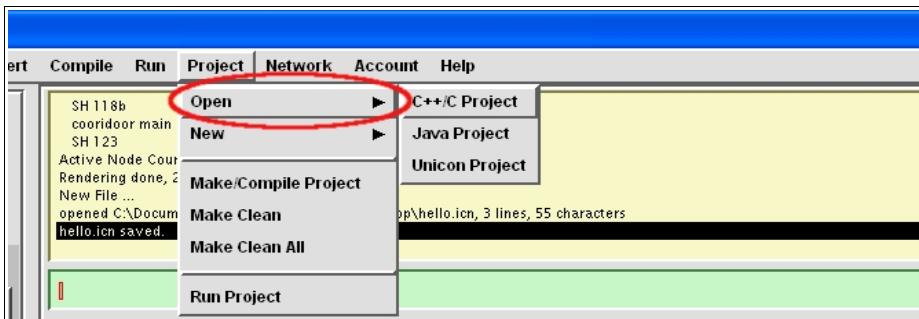
## 3. Define the project files and dependencies for your project

Depending on what project (C/C++/Java/Unicon) you are creating, this will differ.

[MISSING SECTION ON how to handle file dependencies and links for C/C++/Java/ Unicorn]

## Opening an Existing Project

1. In the File Menu Bar, select “Project>Open” and select the project that you want to open.



2. Click “Open” to open the Project

This will open up a project that you have been working on.

Next to Opening Projects, the IDE also lets you Run and Debug your programs.

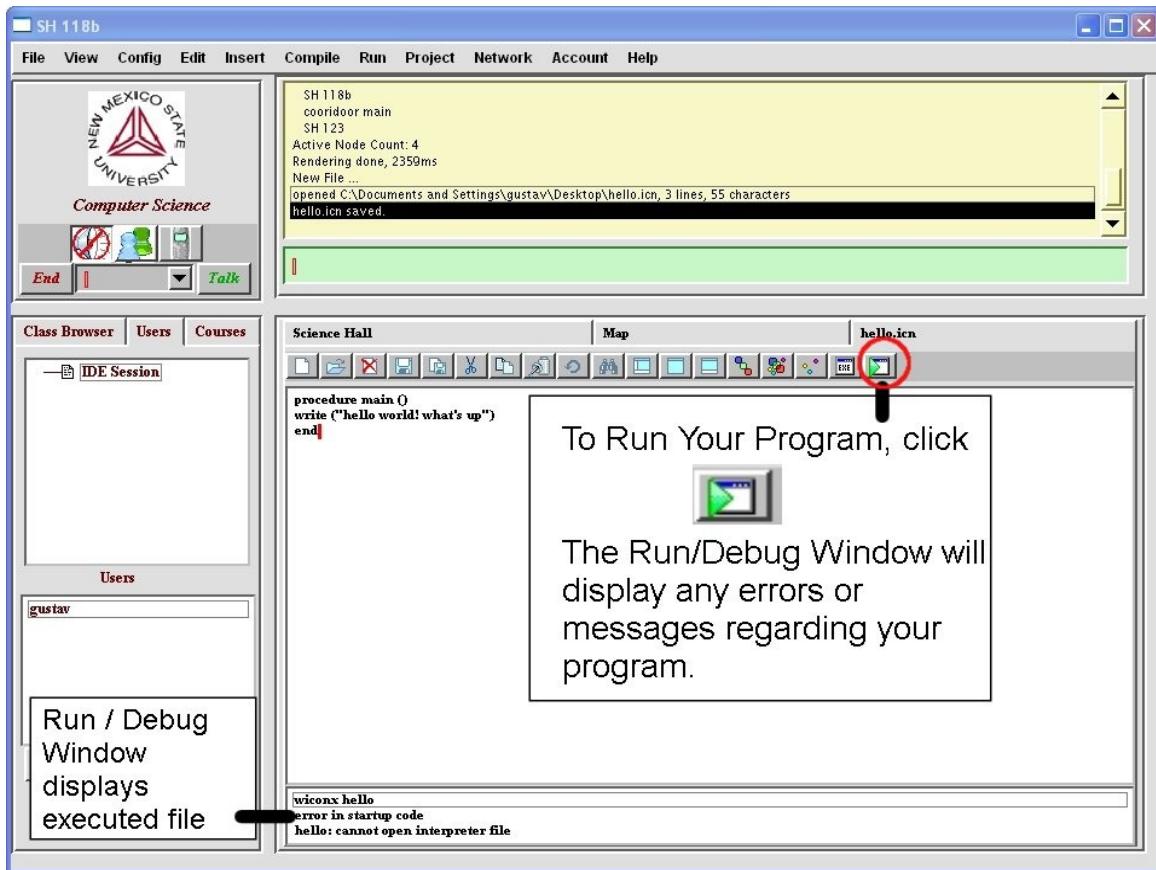
## Running/Debugging a Project

After creating your file, it is possible to run and debug your project. Automatically, when running a file, CVE will save your file for you.

1. To Run your project, press “Run > Run Program” (in the File Menu Bar) or click the Run Icon (in the IDE Toolbar)



Since the CVE IDE contains an automatic debugger, you will see any errors in your code displayed in the Run / Debug Window below your file.

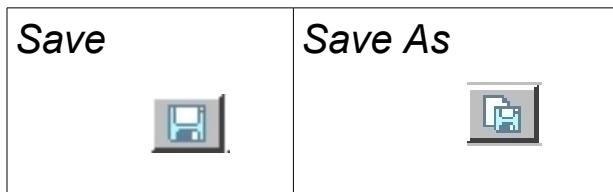


## Saving your project

At any time it is possible to save your project. It is a good idea to back up your work everytime, so that in case of a malfunction, you can still retrieve your work from the saved file.

**NOTE:** Whenever you run a program, your file gets saved automatically

**1. To Save your project, click on “File > Save” or “File > Save As” (in the File Menu Bar) or click on the Save and Save As icons (in the IDE toolbar)**



**2. Click on “Save” to save your file**



## **Chapter 10: Creating Unicorn Projects in CVE**

This chapter describes the specific steps involved in creating a Unicorn project using the CVE IDE. These steps include:

- **Creating a Unicorn Project**
- **Saving your Unicorn Project**
- **Running and Debugging a Unicorn Project**

### **Building Unicorn Projects**

The steps of creating a new / opening an existing project in Unicorn are as follows:

1. **Open up the Dialog wizard**
2. **Fill in the target name of the application**
3. **Add source files**
4. **Compile your project**
5. **Save your project**
6. **Run and Debug your project**

#### **Creating a Unicorn Project**

##### ***1. Open up the Dialog Wizard by clicking on “Project > New Unicorn Project”***

To create a new project, click on the "**Project > New > Unicorn Project**" File menu item. After you select a name for your project, automatically a dialog wizard will be opened; this wizard will let you begin defining a project. This is a dialog box with various tab-items (Figure 7-1).

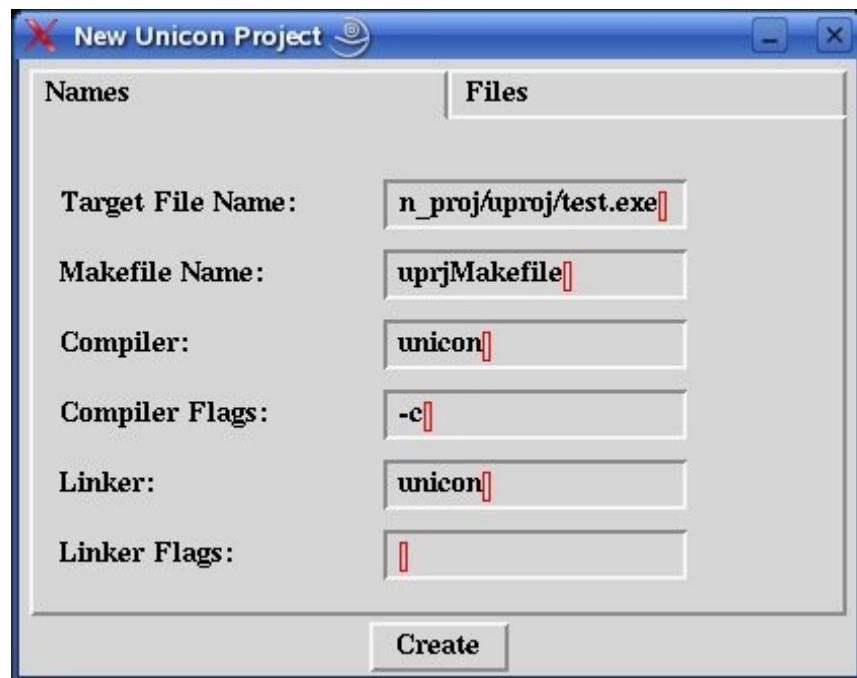
##### ***2. Fill in the target name of the application***

After starting a new project the first thing to fill in is the name of the program you are building (**the Target name**). This target name depends on the name of the application we are building.

For instance, when building a Windows application, one has to name the file + .exe, whereas Linux only requires the name for the file.

For instance, if the project name is **[test]** on Windows we can use for example "**test.exe**" or "**test**" on Linux.

Windows Target Name	Linux Target name
[target name].exe	[target name]



*Unicon Project Names Tab for a Windows application*

The names tab specifies the compiler and linker default values and their flags in addition to the target file name.

**3. Add source files to your project by clicking on the “Files” tab and clicking on “Add” to select the source files you want to Add**



Unicon Project Files Tab

#### **4. After adding your files, click “Create” to create your project**

Once you have added the files needed, click "Create". CVE's IDE will create a Makefile suitable to compile your project with the Unicon compiler.

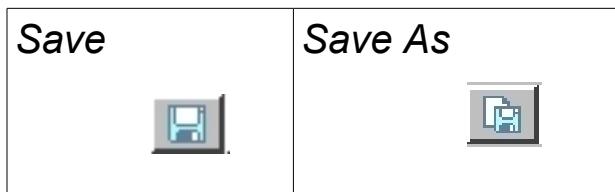
That's it! You can now create your project. After you are done creating it, you can run it by following the instruction below.

### **Saving your Unicon project**

At any time it is possible to save your project. It is a good idea to back up your work every time, so that in case of a malfunction, you can still retrieve your work from the saved file.

**NOTE:** Whenever you run a program, your file gets saved automatically

#### **1. To Save your project, click on “File > Save” or “File > Save As” (in the File Menu Bar) or click on the Save and Save As icons (in the IDE toolbar)**



2. Click on “Save” to save your file

## Running/Debugging a Unicon Project

After creating your file, it is possible to run and debug your project. Since you might have some errors in your project, CVE will automatically check for bugs and take you to the specific line where the error was made. After correcting these bugs, you will be able to run it.

Automatically, when running a file, CVE will save your file for you.

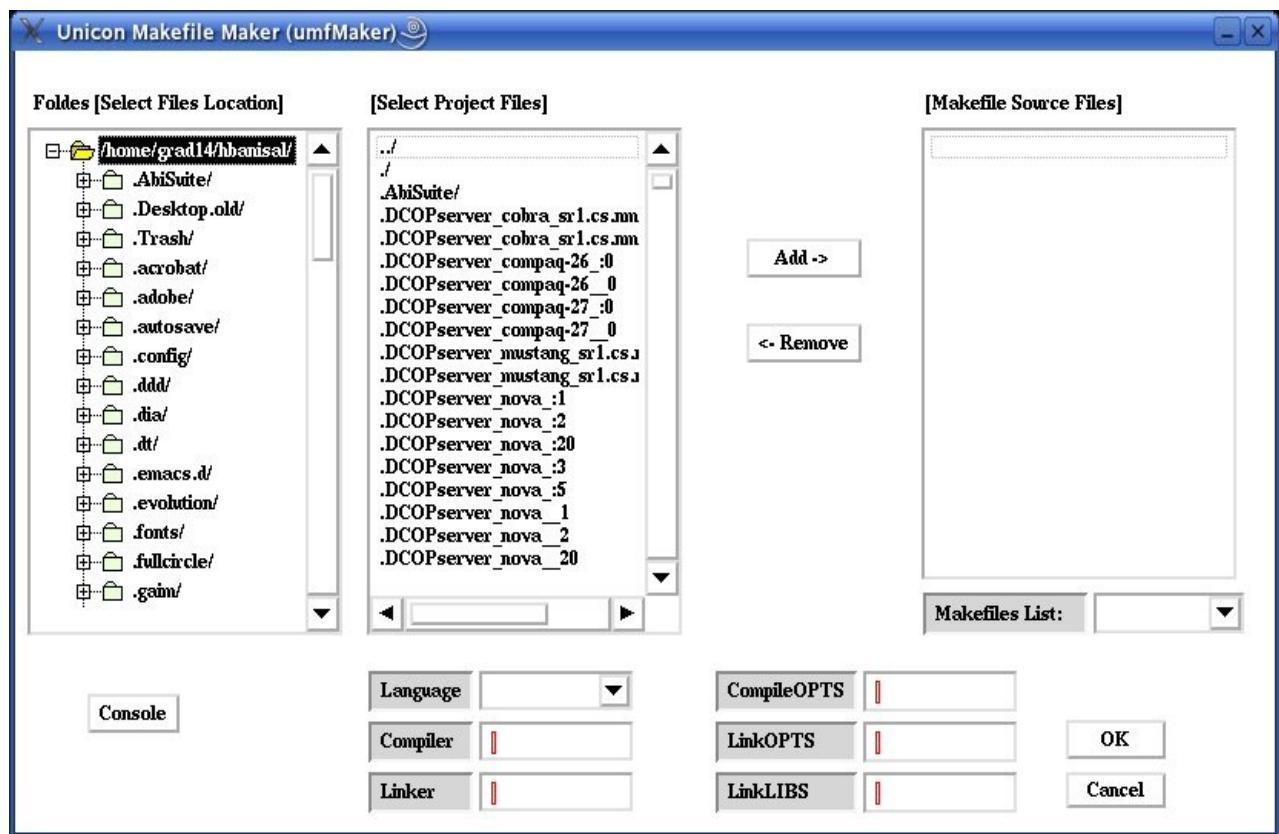
- 1. To Run your project, press “Run > Run Program” (in the File Menu Bar) or click the Run Icon (in the IDE Toolbar)**



Since the CVE IDE contains an automatic debugger, you will see any errors in your code displayed in the Run / Debug Window below your file.

### [1] File:

- **Compiling and running your project. (will follow)**
- **UML Diagram of the IDE files.**
  
- **Unicon Makefile Maker: (umfMaker): foll**



## **Chapter 11: Creating Java Projects in CVE**

This chapter describes the specific steps involved in creating a Java project using the CVE IDE. These steps include:

- **Creating a New Java project**
- **Creating source code in Java**
- **Creating specific Java applications**
- **Saving your Java Project**
- **Running and Debugging a Java Project**

### **Building Java Projects**

Unicron IDE is completely different than other Java IDEs such as Borland's JBuilder. CVE's IDE is not designed for giant Java projects, but it can still be used to compile big projects.

CVE's IDE has been designed to work with Sun's **JDK (Java Development Kit)**. Instead of using command lines for the compiler and interpreter, you interact with these by using the CVE IDE. The entire development process is simplified by letting you focus on coding without having to write long, tedious commands to compile and run your programs.

Here's the general procedure for building a working Java application using CVE IDE. Using CVE, the project creation cycle for a Java application is as follows:

1. **Create a project**
2. **Create your source code**
3. **Compile your project**
4. **Run your project**

#### **1. Create a Project.**

Start with a new Project, even if you don't yet have any source code entered. Name the project the same name as your main Java application name. Once the new project has been created, you will define the **application name**, the **name of the main source file**, the **compiler options**, and other information needed to compile your application.

#### **2. Create your source code.**

The CVE IDE provides an easy editor. This editor is different than the ordinary generic editor. It has special icons and a lot of commands appropriate for programming.

#### **3. Compile your project.**

After the source code has been entered; the next step is to compile your source to object code. You do this by clicking on "**Project> Compile Java**" in the **File Menu Bar**. Since it is certain that the source code will have errors (either syntax or logical errors); compilation errors will be displayed in the message-box window. You can simply right-click on the error, and CVE's IDE will open the source code file, and go to the offending line. After making corrections, you repeat this step until all compilation and linking errors are removed and you are ready to run your program.

### *Compile your Program*

In the File Menu Bar, select  
**Project > Compile Java**

#### 4. Run your project.

Starting the program using the CVE IDE will be direct by choosing “**Project > Run Project**” from the File Menu Bar or simply by selecting the Run Icon.

### *Run your Program*



Or in the File Menu Bar Select  
**Project > Run**

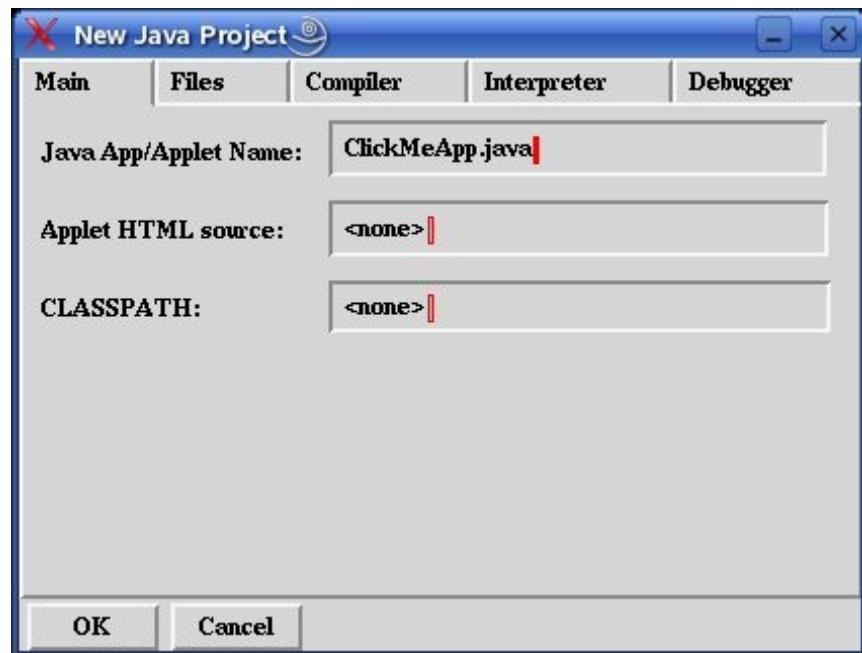
## Creating a New Java Project

### **1. Click on “Project > New > Java Project” on the File Menu Bar**

To create a new Java project in the CVE IDE, click on the “**Project > New > Java Project**” menu. After you select a name for your project, automatically a dialog wizard will be opened; this wizard will let you begin defining a project. This is a dialog box with various tab-items

For most projects you will use just two of those several tabs, namely the **Main** and **Files** tabs.

However, below the function of the **Compiler**, **Interpreter** and **Debugger** tabs are also briefly discussed.

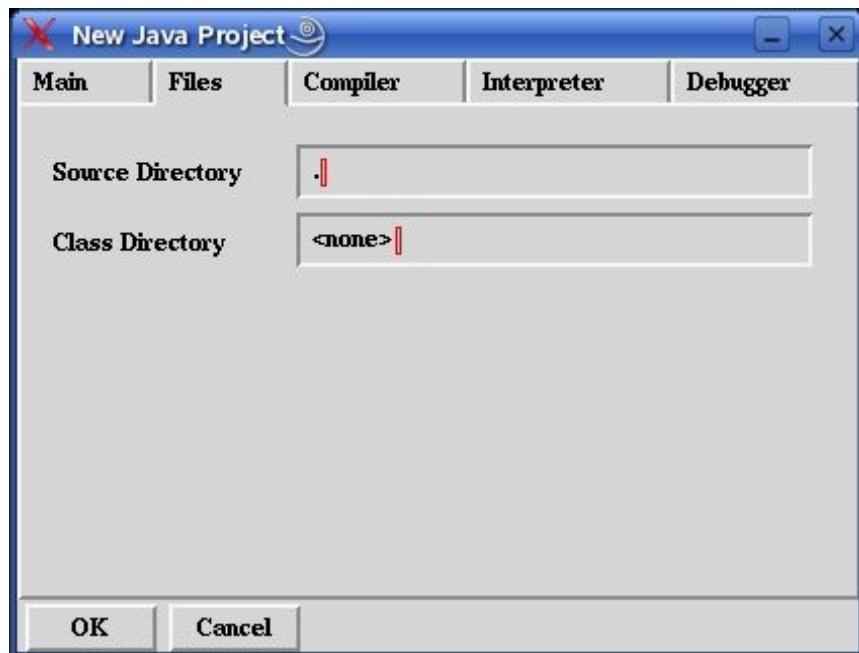


## **2. Specify the name of your project by clicking on the “Main” Tab**

Clicking on **Main** Tab allows you to enter the name of the project. This should be the Java Class name of the main file. You don't need to add .java or any other extensions. When creating an applet, the HTML file must be specified to allow the applet to run. It normally uses appletviewer.

### **3. Specify the .Java files source directory by clicking on the “Files” tab**

The **Files Tab** is where you can specify both of the .java files source directory and the .class files output directory. It is better to have all the files in the same directory with the project file and to leave the default values. For ease of use, you do not need to fill any of the fields out in the Files tab to keep all of your files in the same directory.



*Java Project Files Tab*

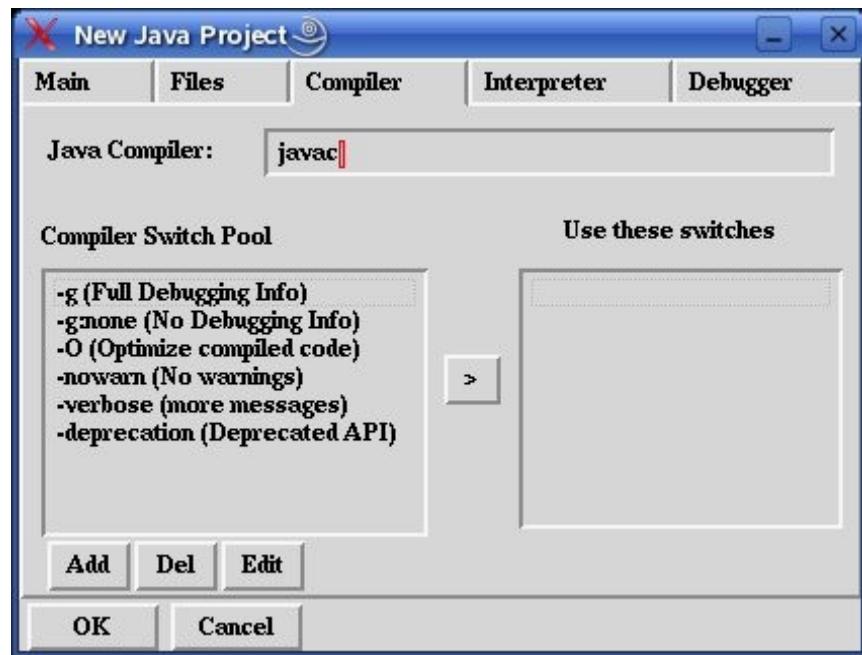
### **3. Click “OK” to start creating your Java Project**

After you have checked the values for **Main** and **Files tabs**, click on “OK” to start programming your JAVA Project. If you want to specify other values, below are descriptions of the functions of the other tabs.

### ***Compiler***

The function of the **Compiler** tab (Figure 6-3) is to enter the java compiler and its options (the compiler is always **javac**).

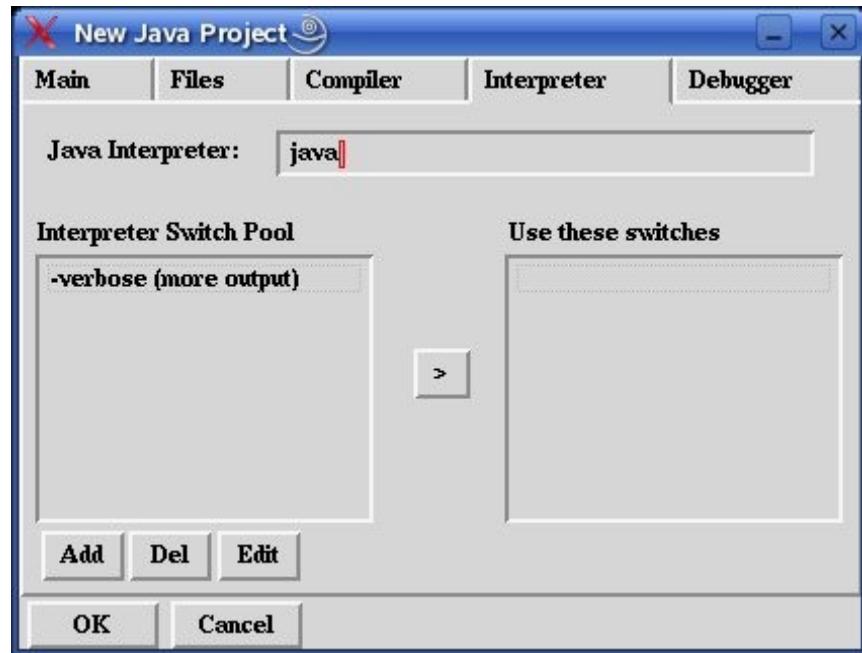
**Compiler Switch Pool:** contains all the supported JDK options.



*Java Project Compiler Tab*

## *Interpreter*

The function of the **Interpreter** tab (Figure 6-4) is to enter the java interpreter and its options (The default value is **java** which can be used for console applications). It is **javaw** if the applications are GUI.

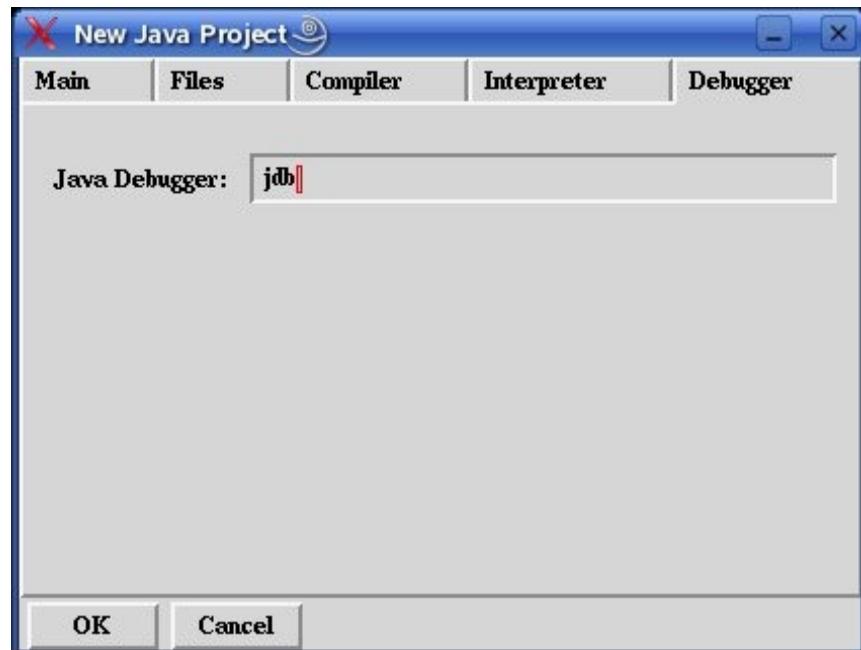


*Java Project Interpreter Tab*

## ***Debugger***

The function of the Debugger tab is to check for errors in your program before you run it.

Enter the java interpreter and its options (The default value is **jdb**)



*Java Project Debugger Tab*

## **Creating Source Code in Java**

Running a Java program in the ordinary method takes several steps. The first of these steps is creating the source file. Source codes normally will be compiled by Javac, the Java compiler **which produces** a bytecode as output. Bytecode can be executed by using the bytecode interpreter. Interpreters are different according to the used operating system and the type of the application.

**NOTE:** Interpreters are different according to the used operating system (Windows or Linux).

## **Creating Specific Java Applications**

The section below describes the process of creating different programs in Java

- Console Application
- GUI Window Application

- Applet

## ***Java console application:***

**What is a Java console application?**

For creating Java console applications in both Windows and Linux, the following compiler and interpreter need to be defined when creating your source code:

Source code -> compiler (javac) -> interpreter (java)

(For both Windows and Linux)

## ***Java GUI window application:***

**What is a java gui window application?**

For creating Java graphical user interface (GUI) window applications, there is a difference between the interpreter used for Windows and Linux applications:

**Windows:** Source code -> compiler (javac) -> interpreter (javaw)

**Linux:** Source code -> compiler (javac) -> interpreter (java)

## ***Java applet:***

**What is a java applet?**

When creating a Java applet, a HTML file is required to be able to use the applet bytecode; then the applet is initiated by using the appletviewer or using the web browser.

*Source code -> javac -> + HTML -> browser*

*-or-*

*Source code -> javac -> + HTML -> appletviewer*

## **The Java Project creation cycle**

CVE's IDE benefits from the way that Java compiler (javac) behaves while compiling the files of the project. Every single file can be compiled separately by entering "javac ProgramName.java" in the command line. This will produce all the required class files.

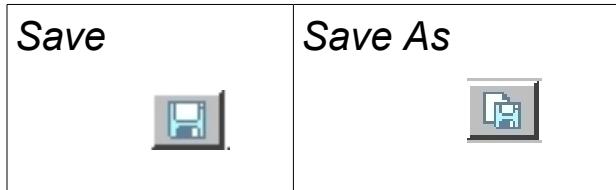
For ease, the new project creations works with only a single file; the one that has the "main" method. It is recommended to name the project by the main-file name.

## Saving your Java project

At any time it is possible to save your project. It is a good idea to back up your work everytime, so that in case of a malfunction, you can still retrieve your work from the saved file.

**NOTE:** Whenever you run a program, your file gets saved automatically

**1. To Save your project, click on “File > Save” or “File > Save As” (in the File Menu Bar) or click on the Save and Save As icons (in the IDE toolbar)**



2. Click on “Save” to save your file

## Running/Debugging a Java Project

After creating your file, it is possible to run and debug your project. Since you might have some errors in your project, CVE will automatically check for bugs and take you to the specific line where the error was made. After correcting these bugs, you will be able to run it.

Automatically, when running a file, CVE will save your file for you.

**1. To Run your project, press “Run > Run Program” (in the File Menu Bar) or click the Run Icon (in the IDE Toolbar)**



Since the CVE IDE contains an automatic debugger, you will see any errors in your code displayed in the Run / Debug Window below your file.

## **Chapter 12: Creating C/C++ Projects in CVE**

This chapter describes the specific steps involved in creating a C/C++ project using the CVE IDE. These steps are:

- **Creating a New C/C++ project**
- **Saving your C/C++ Project**
- **Running and Debugging a C/C++ Project**

### **Building C/C++ Projects**

In order to create C/C++ projects you'll need to take the following steps:

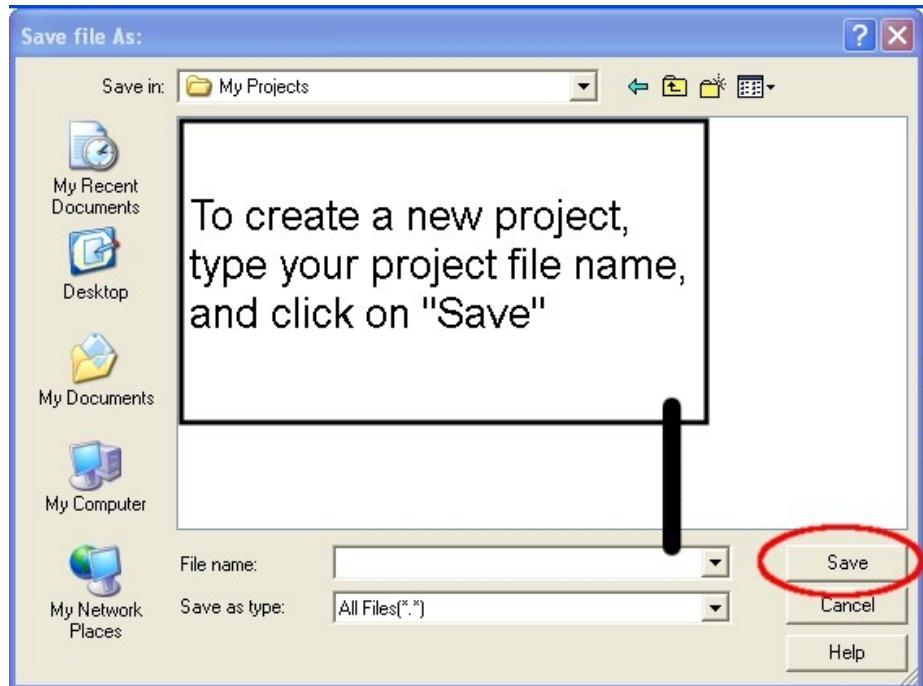
1. **Open and create a new project with the dialog wizard**
2. **Fill in the Name for the project**
3. **Select the type build and compiler for the project you are creating**
4. **Check the project attributes**
5. **Add the source files to your project**
6. **Save your Project**
7. **Run and Debug**

### **Creating a new C/C++ project with the dialog wizard**

In order to create new C/C++ projects do the following:

#### **1. Click on “Project > New > C++ Project”**

After you select a name for your project, automatically a dialog wizard will be opened; this wizard will let you begin defining a project.



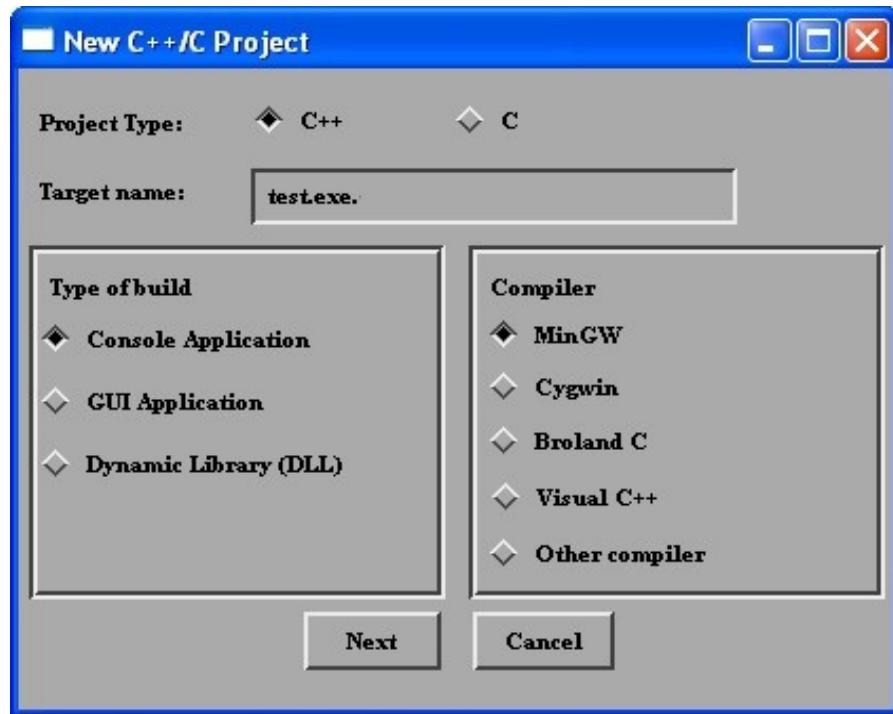
*Saving a new project*

**2. Fill in the name of the project you are building (Target name) and click “Save”**

This target name depends on the type and the name of the application you are building; If you are building a Windows project, type in the [target name] + .exe, if you are writing a Linux project, type in just the [target name].

For instance, if the project name is **[test]** on windows we can use for example **"test.exe"** or **"test"** on Linux. Also it may be **"test.a"** when we build **".a"** libraries; or a **"test.lib"** for most windows compilers.

Windows Target Name	Linux Target name	A Libraries	Most windows Compilers
[target name] .exe	[target name]	[target name] .a	[target name] .lib



*New Project wizard*

### **3. Select the type of build and compiler for the project you are creating**

When starting a new project, you'll want to define the program type of build and the compiler. You can choose from the following options:

- Select “**Console Application**” for a shell or console window.
- Select “**GUI application**” for a graphical interface.
- Select “**Dynamic Library (DLL)**” (dynamically loaded library)

When you are using a Windows system you will also be able to define the compiler you are using.

You can choose between the following compilers:

- **MingGW**
- **Cygwin**
- **Borland**
- **Visual C++**
- **Other Compilers**

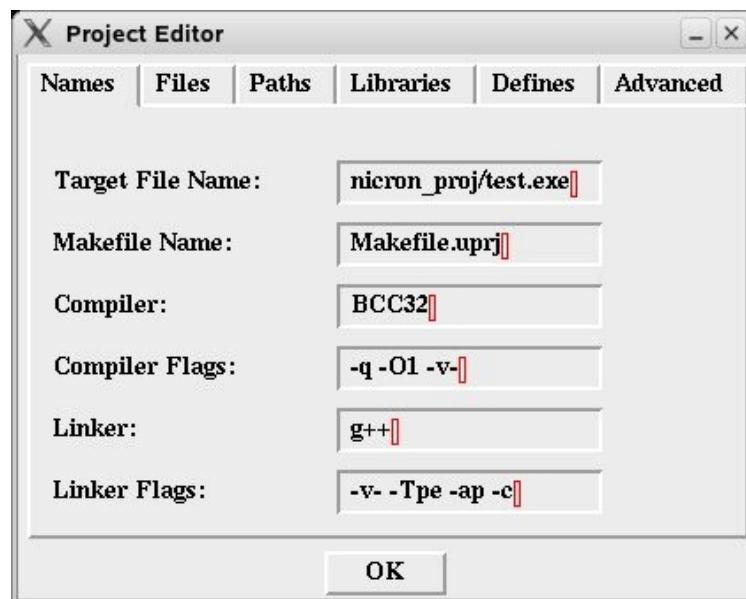
By selecting one of these in the New Project Wizard, you will ensure that the compiler you chose will be used.

**4. Click “Next” when you are done defining your project**

**5. Check the project attributes by clicking on the “Names” and “Files” tabs**

If you want to check the project attributes, click on the **Names** and **Files** tabs.

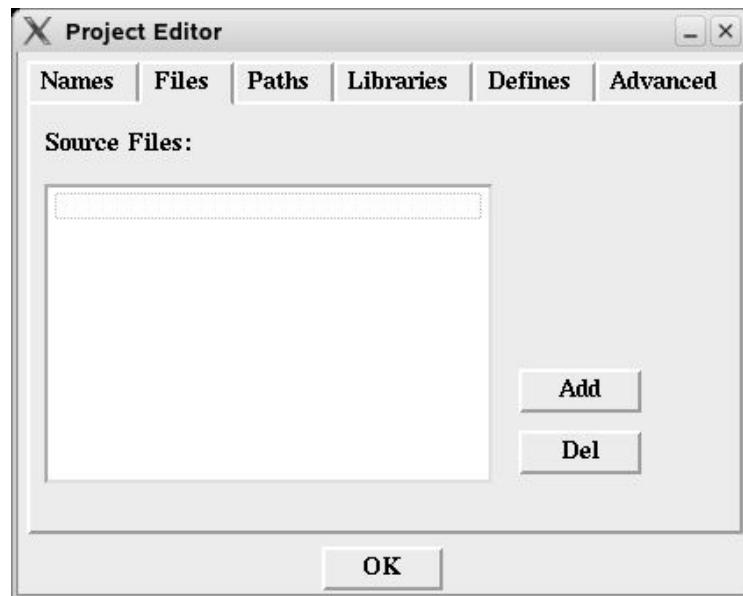
Once you have defined the initial project attributes, a new dialog box with set of tab-items will appear. Most of the fields will be defined according to the values you filled in the New Project wizard. Check to make sure that these contain the values that you entered.



*Project Editor with “Names” Tab selected*

**6. Add source files to your project by clicking on the Files Tab and clicking “Add” to add specific source files**

If you want to add source files click on the “**Files**” tab. Make sure that your source files are in the same folder as your project file that you created. You can set definitions as needed in the other tabs. Once you have added the files needed, click “**OK**”. The CVE IDE will create a Makefile suitable to compile your project with gcc or Borland BCC32.

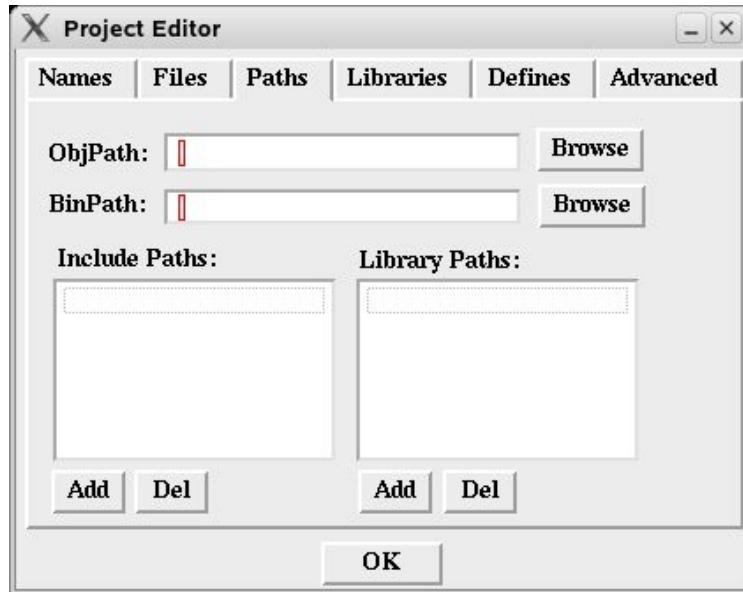


*Project Editor with “Files” Tab selected*

If you want to specify other values, below are descriptions of the functions of the other tabs.

## Paths

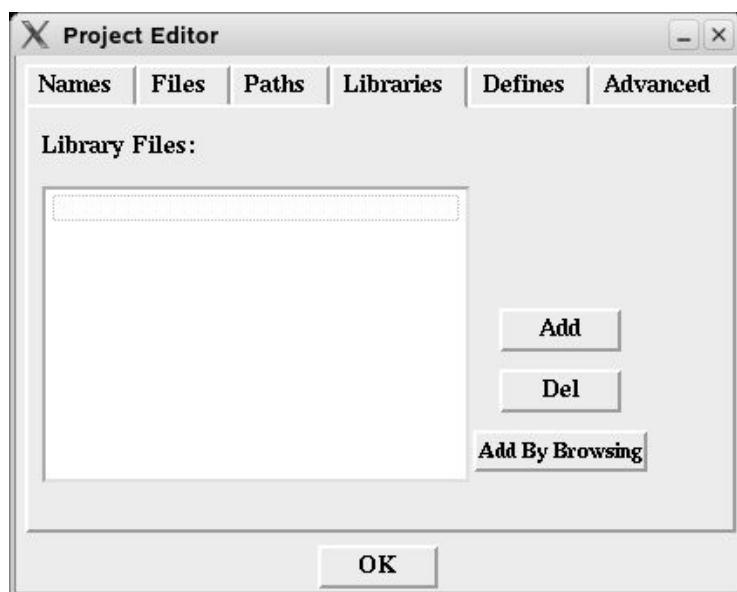
This tab lets you specify the source files directory, generated object and binary files directories.



*Project Editor with “Paths” Tab selected*

## Libraries

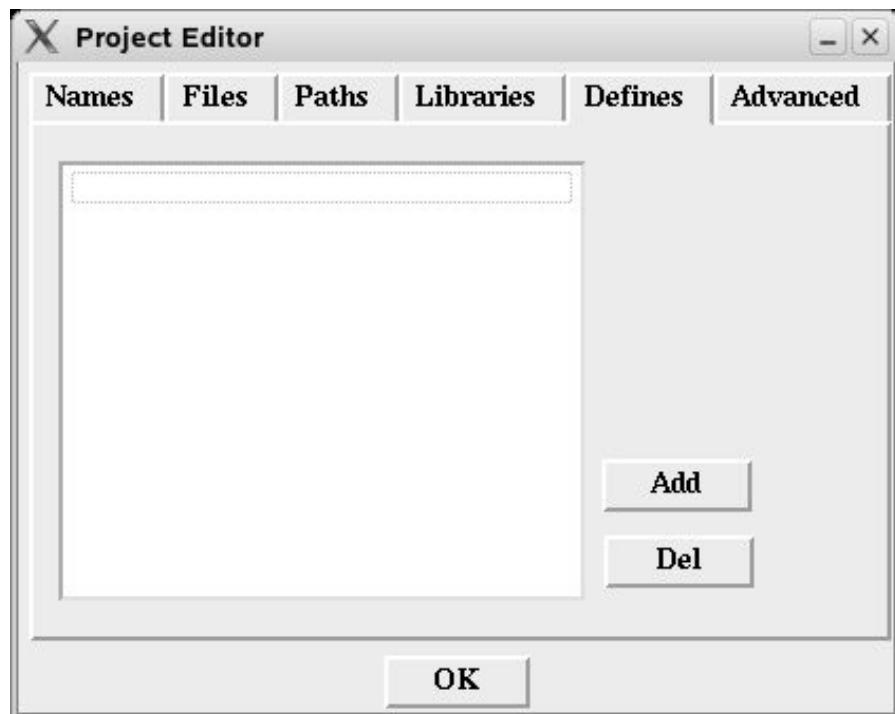
This tab lets you specify which library files you want to add to your project.



*Project Editor with “Libraries” Tab selected*

## Defines

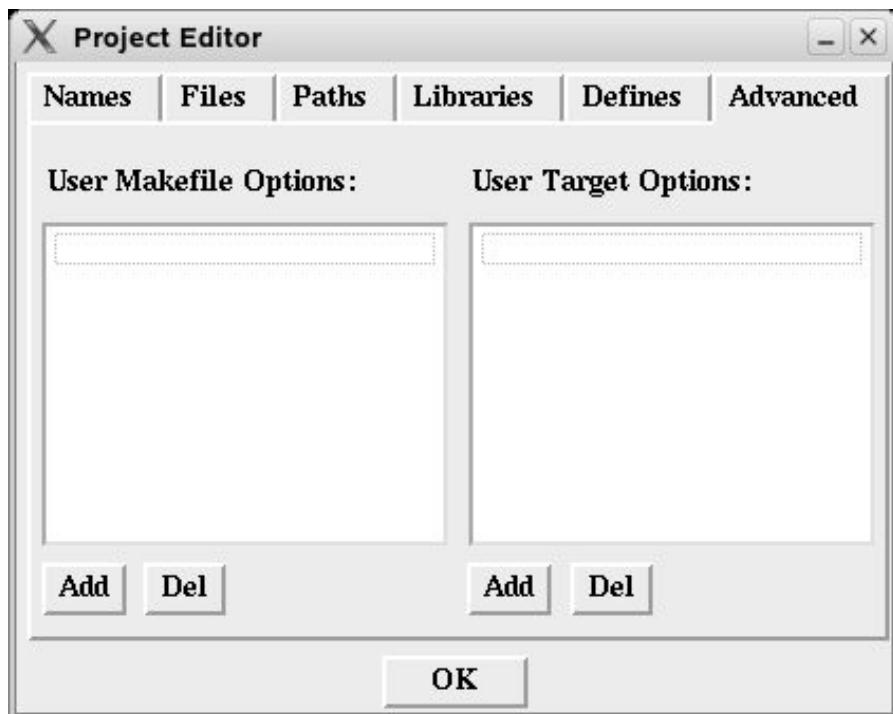
This tab allows to define a compile time defines for C and C++ programs.



*Project Editor with “Defines” Tab selected*

## Advanced

This tab lets you define Makefile and Target options.



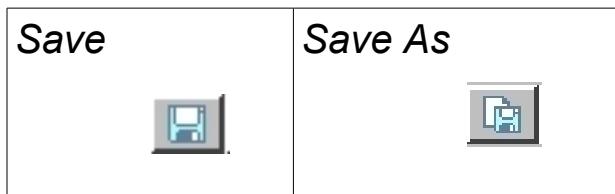
*Project Editor with “Advanced” Tab selected*

## Saving your C/C++ project

At any time it is possible to save your project. It is a good idea to back up your work every time, so that in case of a malfunction, you can still retrieve your work from the saved file.

**NOTE:** Whenever you run a program, your file gets saved automatically

**1. To Save your project, click on “File > Save” or “File > Save As” (in the File Menu Bar) or click on the Save and Save As icons (in the IDE toolbar)**



2. Click on “Save” to save your file

## Running/Debugging a C/C++ Project

After creating your file, it is possible to run and debug your project. Since you might have some errors in your project, CVE will automatically check for bugs and take you to the specific line where the error was made. After correcting these bugs, you will be able to run it.

Automatically, when running a file, CVE will save your file for you.

- 1. To Run your project, press “Run > Run Program” (in the File Menu Bar) or click the Run Icon (in the IDE Toolbar)*

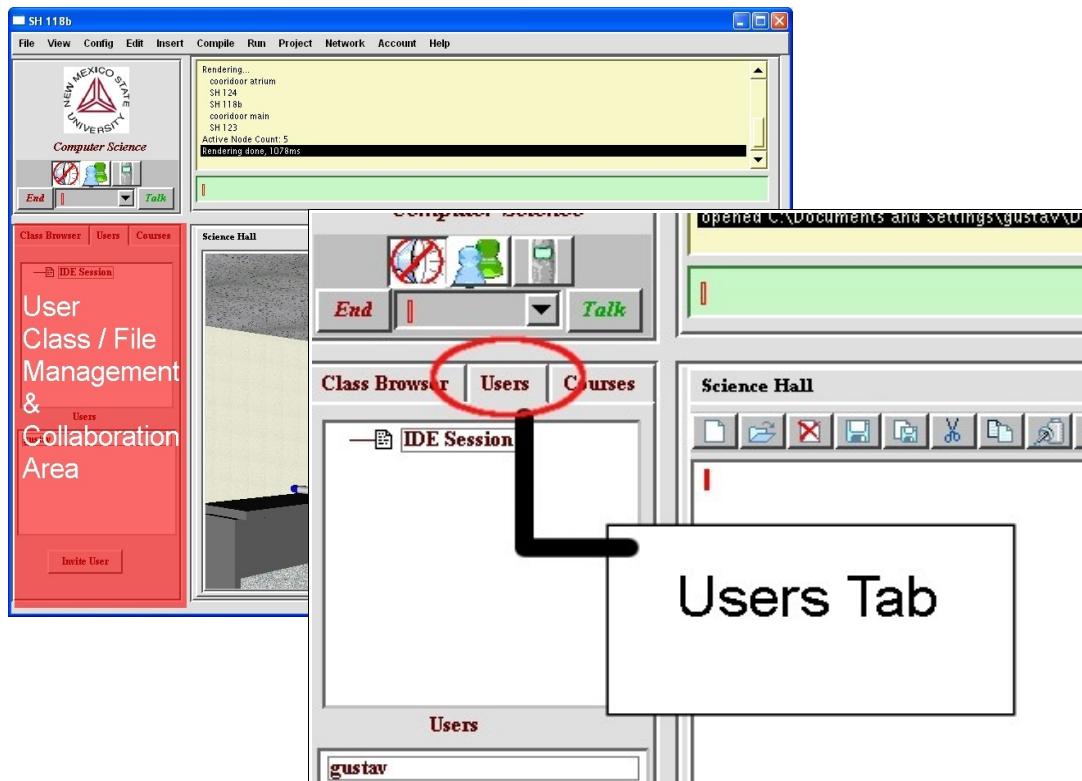


Since the CVE IDE contains an automatic debugger, you will see any errors in your code displayed in the Run / Debug Window below your file.

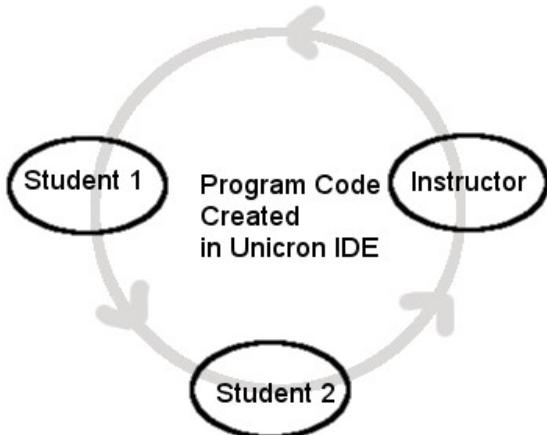
## Chapter 13: Using the Collaborative IDE to share Documents with others

This chapter details how you can develop program code and share your projects in CVE with others using the **User Tab** in the **User/Class File Management and Collaboration Area**.

In CVE it is possible to share documents such as computer code that you have written in either Java, C/C++ or Unicon by using the **User/Class File Management and Collaboration Area**. As mentioned in the previous chapter, the CVE IDE lets you write, edit, run, compile and debug code inside CVE. The collaboration area can also be used to share your files in a collaborative session. This makes the CVE IDE especially suited for education purposes, because students can debug their code with the help of other students or their instructor by sharing their code with them.



**NOTE:** It is possible to share your code with others by you initiating a collaborative session with another user (using the **User Tab** in the **User Class/File Management and Collaboration Area**). This area lets you organize your projects, connect with other users and share your code by inviting another user to share your screen.



*Sharing code will lead to a greater sharing of knowledge*

This chapter will describe the following items:

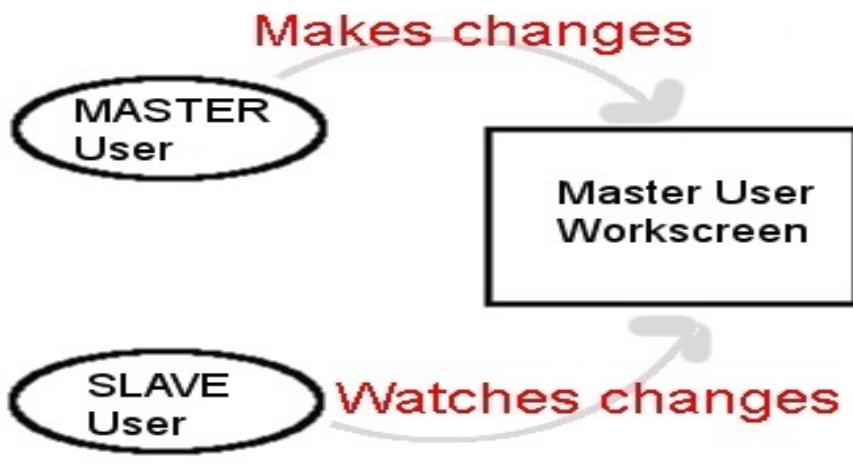
- **Sharing your code with others through the Collaborative IDE**
- **Inviting a Slave user to collaborate**
- **Collaborative Session Options**
- **Taking a Turn on a Session**
- **Closing a Collaborative Session**

The IDE gives users the ability to work on a project in the virtual world individually, as well as share these files with other users for troubleshooting. This lets users work on projects together and read each other's code by using the collaborative function of the IDE.

## Sharing your code with others through the Collaborative IDE

In the **collaborative IDE** a student can ask the instructor to see his/her computer code, so the instructor can help the student in debugging the code. In the collaborative IDE there are two roles that can be played by users in collaborating with each other: **Master** and **Slave**.

The **Master** user is *the person currently working on a program and shares access to their screen*, whereas the **Slave** is *witness to what the Master user is doing on their screen*. However, a Slave user can ask for permission from a Master user by *Taking a Turn* to work on a file if they want to try their hand at it. This then switches the roles around between Master and Slave users. .



### NOTE:

**Master user:** The Master user invites another person in sharing their workscreen, and is the person who controls all the events in the shared editor screen

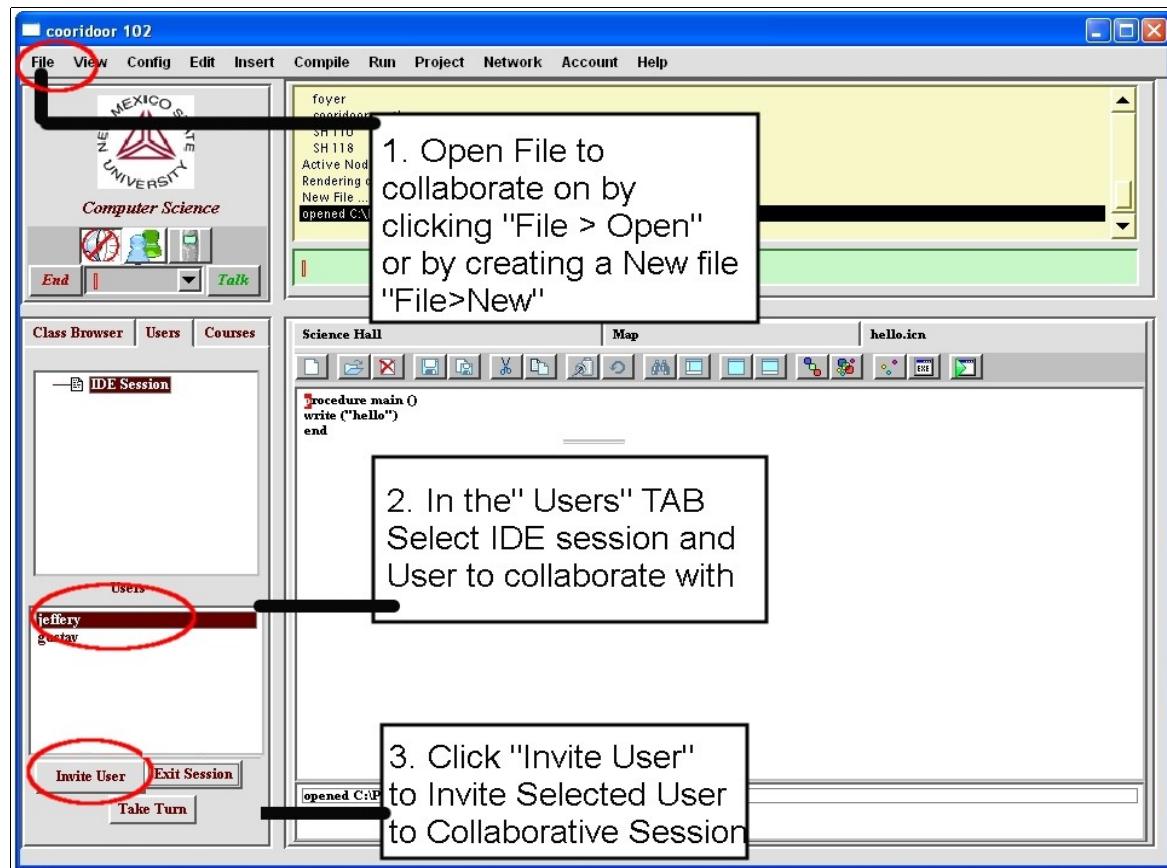
**Slave user :** The Slave user accepts the invitation from the Master user, but can only see what actions the Master user performed in the editor screen. The Slave user can ask for permission to **Take a Turn** and become a Master user who can edit the file.

Anybody can be a **Master** or **Slave**, it just depends on which person initiates a collaborative session. For instance, if a student wants to debug his code with the help of an instructor, the student (as **Master** user) will need to invite the instructor (**Slave** user), so that the instructor can see the student's interactions on screen. The instructor (the Slave user) can then give feedback through chat or Take a Turn to help the student debug their code.

In order to use the **Collaborative IDE**, a Master user will always need to take the following steps:

**Step 1- Open or create a file to collaborate on**

**Step 2- Invite a Slave user to collaborate**



Above is an overview of the process, followed by the individual steps to opening a file and inviting a user to collaborate.

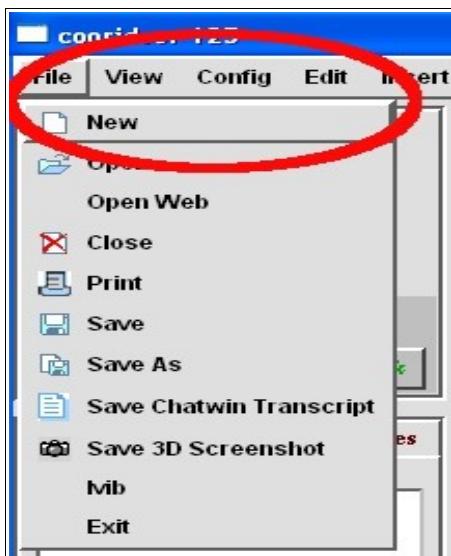
**NOTE:** In order to collaborate on a file, a **Master** user will always need to take these two steps:

**1. Open an existing or new file to work on**

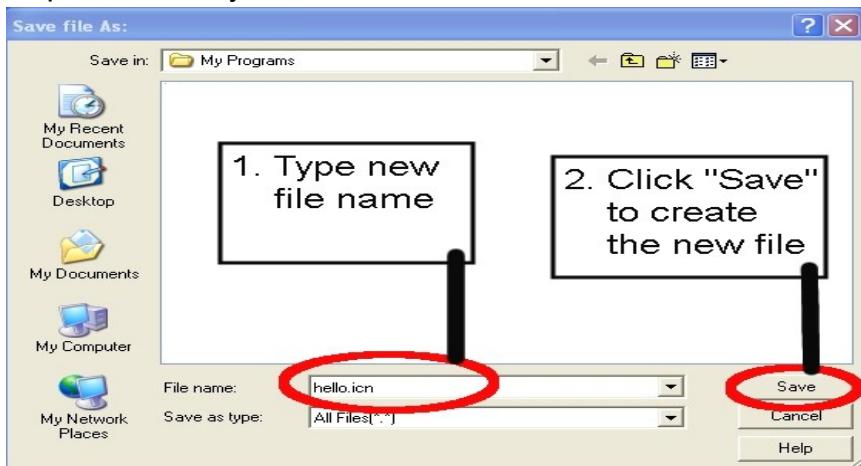
**2. Invite a Slave user to a collaborative session**

## *To create a new file:*

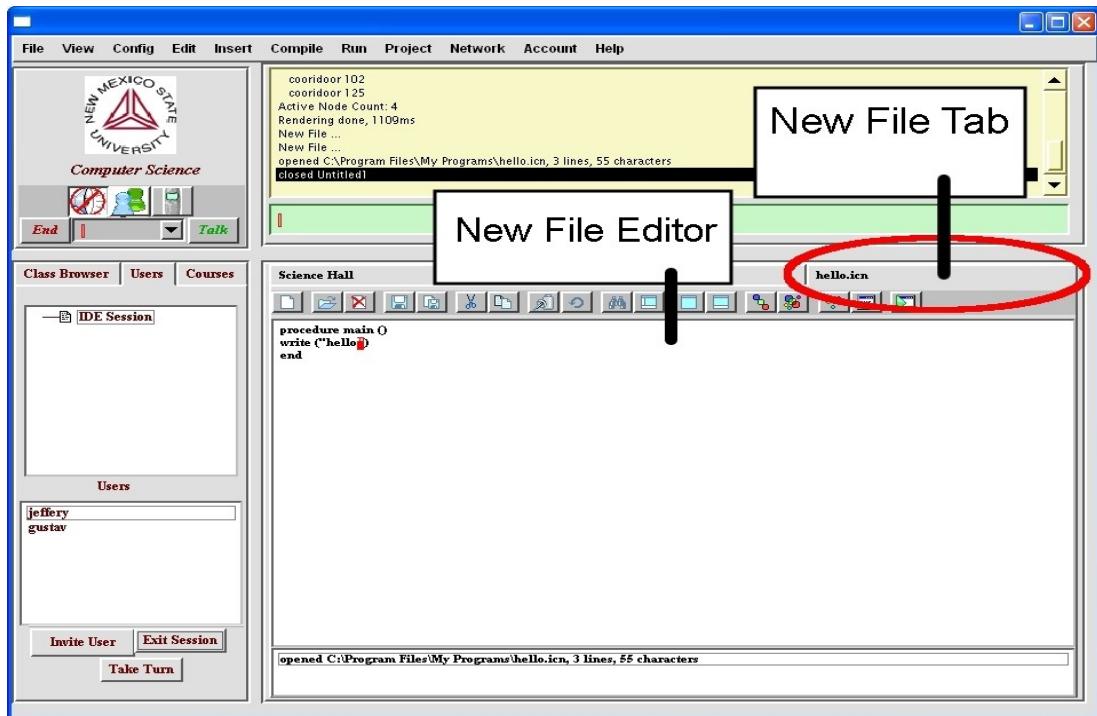
### **1. Select "File >New"**



This will open a "**Save File As**" window that will let you name the new file, and let you choose the place where you want to **Save** the file.



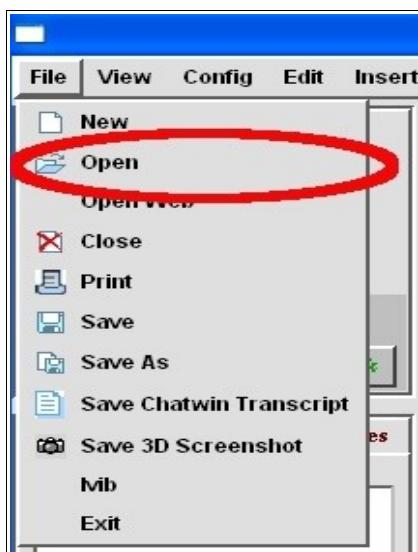
### **2. Type in the new file name and click "Save"**



A "New File" message will appear in the chat window, as well as a new Tab that will let you edit your new file. Another user can now be invited to a collaborative session, which is described in the ***Inviting a Slave User to Collaborate*** section below.

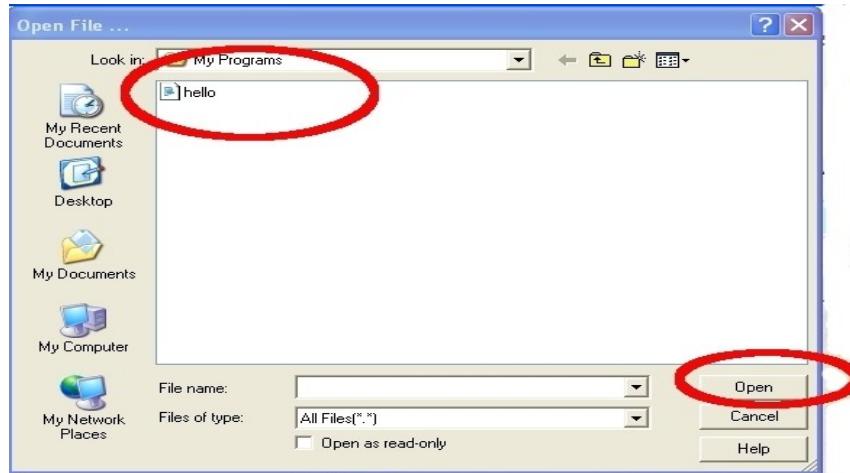
## *To open an existing file:*

### 1. Click "File> Open"

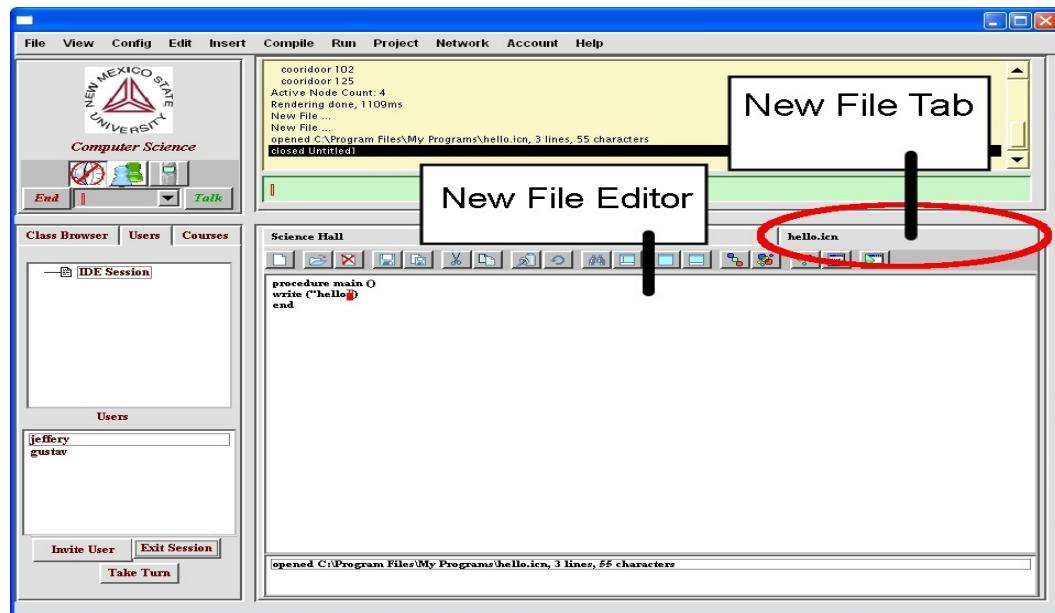


This will open a "Open File" window to select the file you want to open.

**2. Select the file you want to Open and then press "Open".**



**3. The message "Opened [Filename]" will appear in the chat window if your file has successfully loaded and a New Tab will be opened containing the file.**



Another user can now be invited to a collaborative session, which is described below.

## Inviting a Slave user to Collaborate

NOTE: In order to invite another Slave user, a Master user will need to first have opened a file (as described above) to collaborate on with a Slave user

Inviting a Slave user in CVE is easy:

**1. With a file opened, click the “Users” tab, from the list of tabs in the left and select the “IDE Session”.**

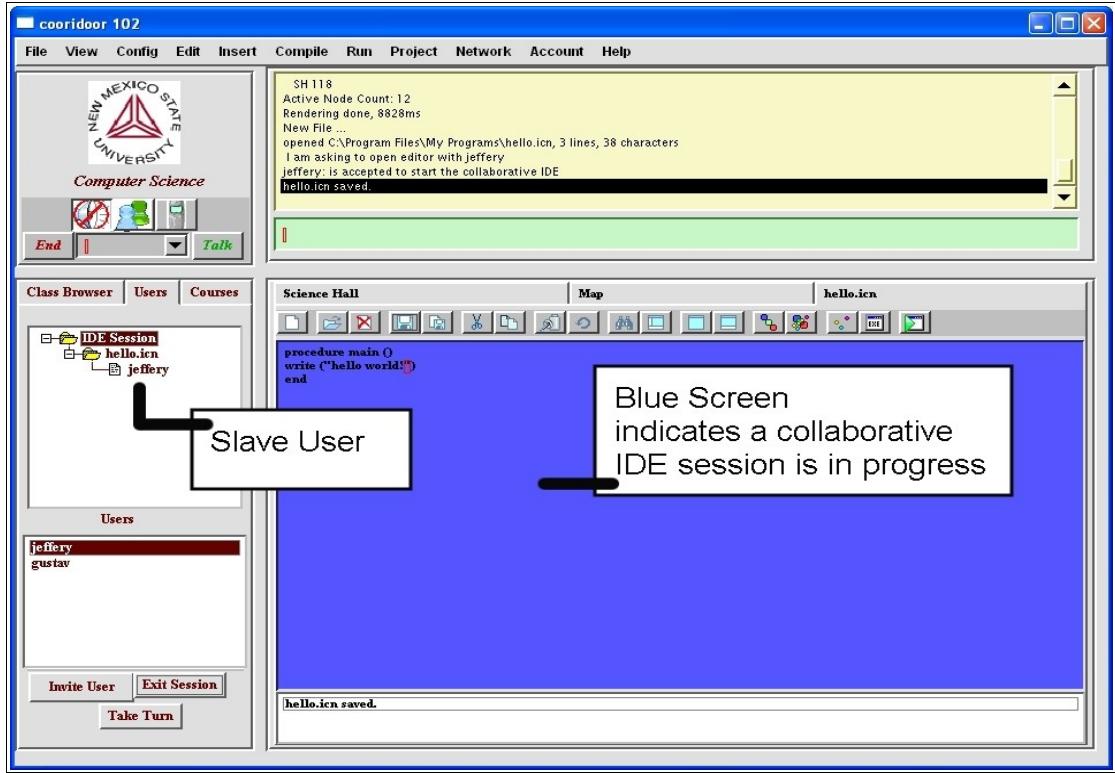
**2. Choose one of the users to do a collaborative IDE session with, by clicking on their user name and then pressing the “Invite User” button.**



A message box will appear in the selected Slave user's client window saying "User [Master User Name] ask to open collaborative editor session".

This signals to the Slave user that the Master user wants to have a collaborative editor session with them

**3. Modify the file in the file editor screen**



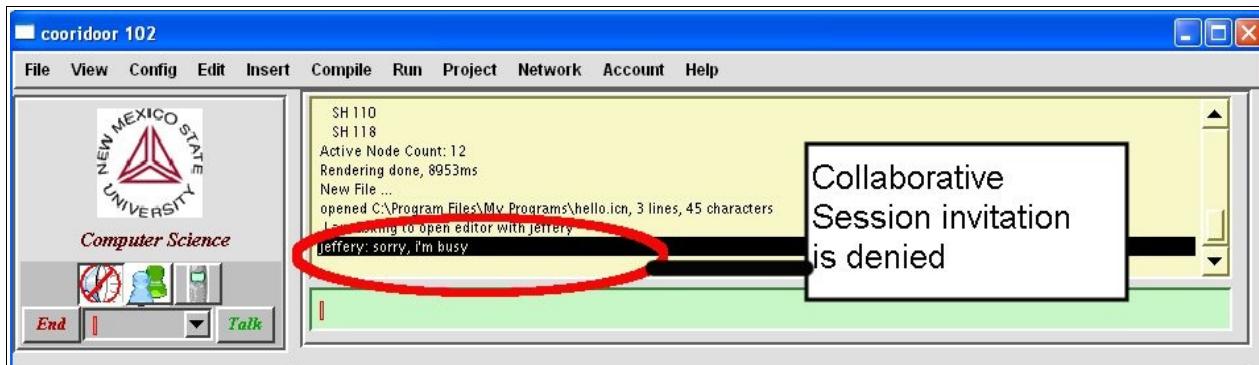
The Slave user will see the Master user's name in the IDE session tree with a + to indicate that this is the current Master User.

The Master user in turn will see the Slave user in the IDE session tree without a + to indicate that they are the current Slave User.

## Collaborative Session Options

When invited by a Master User, the Slave user can either **Reject (by clicking “Cancel”)** or **Accept (by clicking “Okay”)** the Master user's request for a collaborative editor session.

## *When a collaborative session is rejected*



If the Slave user presses "**Cancel**" on the message box, the new editor tab will not open on the Slave user's screen, and the Master user's request for a collaborative session is rejected. A message from the user invited will appear in the Master user's screen that says "sorry, I'm busy". This signals that the Slave user does not want to accept a collaborative session at this time.

## *When a collaborative session is accepted:*

If a Slave user presses "**Okay**" on the message box, a new editor tab will open in the slave user. A chat message will appear in the Master user's screen

"[User Name] is accepted to start the collaborative IDE",

which indicates to them that their request for a collaborative session is accepted by the Slave user. As displayed in the image above, a collaborative session changes by the background color to **light blue** in both the Master and Slave's side (which indicates that the tab is currently used for a collaborative session).

**NOTE:** The Slave user has no ability to type or make any changes in the editor, since the Master user can only make changes. Hence, during the collaborative session, the tab for the Master user is unlocked, whereas the Slave user's tab is locked.

The Slave user can give feedback to the Master user by using **voice chat** or **text chat**. Moreover, the Slave user can ask to **Take a Turn**, which will allow the Slave user to become a Master user and edit the file while the Master becomes their Slave user.

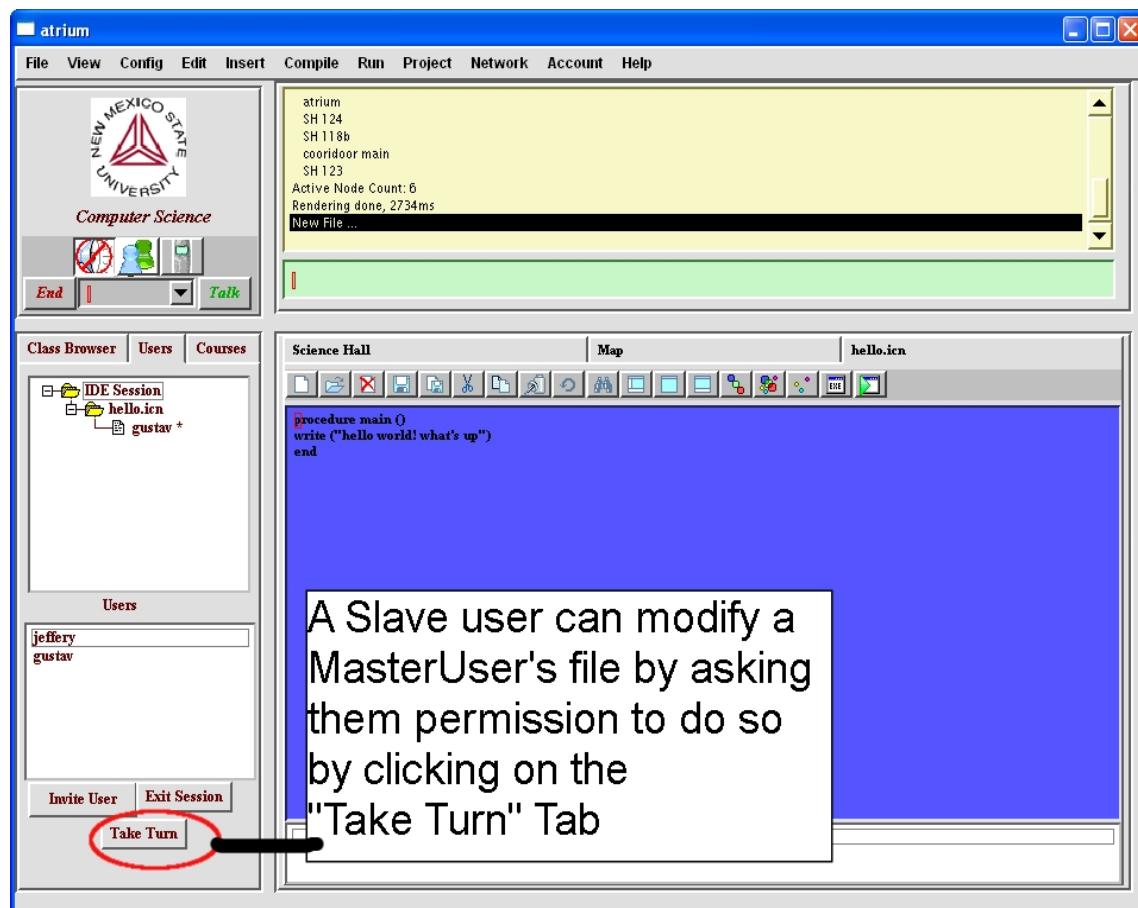
When a Collaborative Session has started, anything the Master user does in his/her editor will appear in the Slave user's editor screen:

- **Typing characters from the keyboard**
- **Selecting text using mouse or keyboard**
- **Using the scrollbar**
- **Mouse Click and Pageup, Pagedown keys.**
- **Selecting all (Ctrl-A), Copy (Ctrl-C), Cut (Ctrl-X), Paste (Ctrl-V), Undo (Ctrl-Z) and Redo (Ctrl-Y)**

During the collaborative session, the Slave user can chat with the Master user and give feedback to the Master user about the collaborative session. A Slave user can also ask to ***Take A Turn*** to edit the file themselves.

## Taking a Turn on a Collaborative Session

In order to ***Take a Turn*** and work on a program, a Slave user will need to ask for permission for this from the Master user. This ensures that the Master user is finished with their work and is ready to share their program with the Slave user.



In order for a Slave user to Take a Turn, the following will need to be done:

- 1. The Slave user will need to click on the “Take Turn” tab.**
- 2. The Master user will need to click on “Okay” when asked if the Slave user can Take a Turn and start editing the Master user’s file.**

When a Slave user asks for permission, the Master user will receive the following text in a pop-up asking the Master user to **give** or **deny** permission.

“User [Slave username] ask to start editing the [filename] collaborative file”



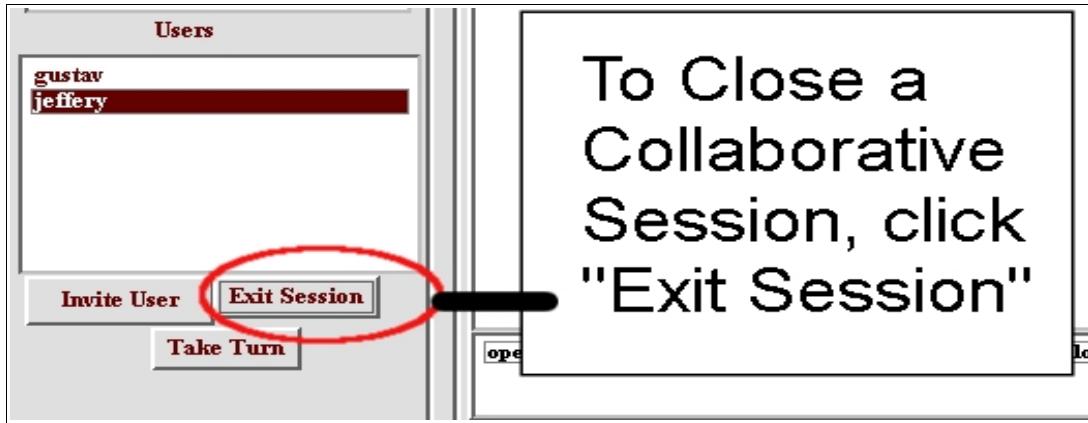
If a Master user is ready, they can click on “**Okay**” to switch roles with the Slave user.

If a Master user is not ready to give the Slave user a turn at editing the file, they can click “**Cancel**” to deny the Slave user permission to edit their file.

## Closing a Collaborative Session

At the end of a Collaborative session, it is possible to close and save the file you have worked on with the other person. To do is simple:

- 1. A Master user can close the collaborative session by clicking on “End Session”.**



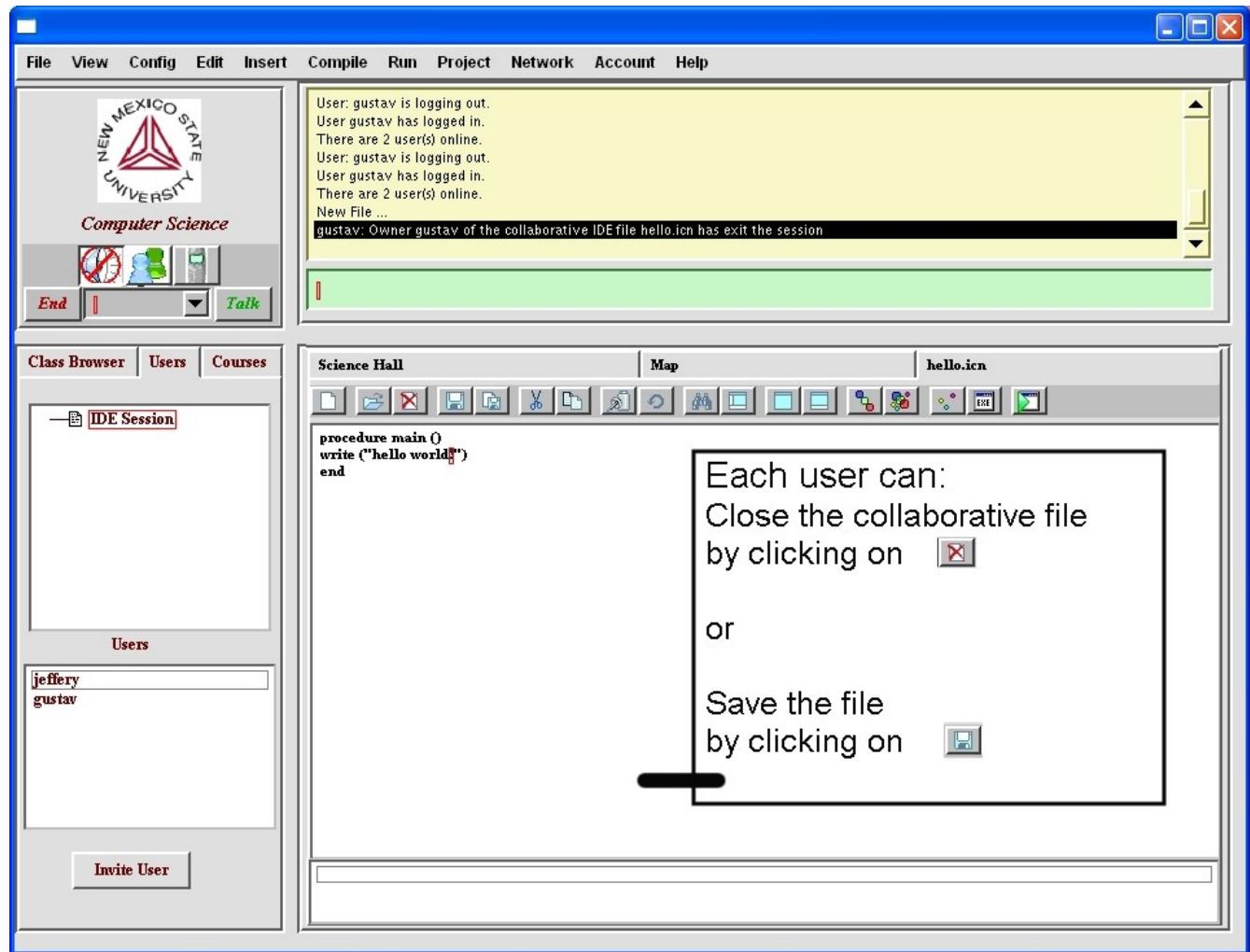
The File screen will return from the collaborative light blue color to a regular white background to indicate that the collaborative session has ended. Closing a session will automatically save the last version of the file on the Master and Slave user's hard drive.

It is also possible to close the tab of the collaborative screen by clicking on



or Save the file by clicking on





If the Master User logged out or closed his tab a chat message will appear on the slave user's screen

"[User Name] close collaborative IDE".

This indicates to the Slave user that the Master user has ended the collaborative session.

## *Chapter 14: How do I....*