TCP/UDP Networking Program Documentation

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Networking Fundamentals

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# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason for Change** | **Version** |
| Huang Chen | 04-09-2013 | Initial release | 0.1 |
| Huang Chen | 04-24-2013 | Update | 0.2 |
| Huang Chen | 05-4-2013 | Update | 0.3 |

# Executive overview

The GET THE PICTURE game is a multithreaded game that connects up to 4 players to play a picture puzzle games at the same time. The puzzle can be selected from categories by each player. Each player’s progress and moves will be shown on the GUI in real

time. The game will end and the winner will be the player who completes the progress bar using the shortest amount of time. To fill up your progress bar you will need to shift parts of the picture into the correct slot. Filling it in the correct slot will earn points, moving it out of the correct slot will cause you to lose points.

# Audience

*This can be look to as a manual for the game. People who possibly purchase or use the game can learn how to play the game. Future coders can also look at this and learn the creation process behind the game. Using this, future rework of the game is easy and possible. Future coders can learn what the thought process was behind the game and how they can change it when needed. So the general audience will be people who play the game, and people that will in the future, improve it.*

# Assumptions made for this project

*This project needs a fair amount of cut up pictures.*

*It needs a chat client, and a server, which is a network.*

# *Gantt chart*

**Gantt chart in folder**

## Gantt task descriptions:

| **WBS** | **M** | **Tasks** | **Date (if known)** |
| --- | --- | --- | --- |
| 1 | M | Assigned project ideas | w3c2-d8 3/23/2011 |
| 2 |  | Individually think about possible projects |  |
| 3 | M | Project ideas discussed in class | w4c1-d10 3/28/2011 |
| 3.1 |  | Discuss projects with possible team(s) / team member(s) |  |
|  |  |  |  |
|  | M | Teams formed | w4c1-d11 |
|  |  |  |  |
| N | M | Design Document assigned | w4c2-d12 |
| N.1 |  | *Design discussions {incl: scope of project}* |  |
| N.2 |  | *Update design document* |  |
| N.3 |  | *Risk management plan* |  |
|  |  |  |  |
|  |  | System Design |  |
|  | M | Team present project topic to class | w5c1-d13 |
|  |  | *GUI Prototype* |  |
|  | M | Write project plan for lab, update design document | w5c3-d15 |
|  |  |  |  |
|  | M | Design Documents due for review, end of class | w6c1-d16 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | M | Mid-project review: GUI with integrated chat | w8c2-d23 |
|  |  |  |  |
|  |  | Teams write test document – due in class | w9c3-d27 |
|  |  |  |  |
|  |  | *System testing – update test document with results* |  |
|  | M | Grid testing *{tentative}* | w10c1-d28 |
|  |  |  |  |
|  |  | Team by team review/evaluations with instructor | w10 d29-30 |
|  |  |  |  |
|  |  | *Prepare presentation* |  |
|  | M | Trade show (System Deployment) | *Week 11* |

*M = Milestones*

*{Brainstorm with your team, you will need MANY more tasks that listed. Not only where gaps appear.}*

# *Class and method overview*

Overview of the classes and functionality.

Project parameter Interface

* Contains Port number constants, used by Client and Server
* Contains Author and About messages

Client

* Constructor
  + firstInputPanel()
* firstInputPanel(),
  + IP, Player name, # of players, picture type GUI
* ThreadClient (inner class)
  + Run Method handles input messages from server
* GUI()
  + Creates Client GUI
* waitPlayer()
  + GUI player waiting lobby
* loadBoardPanel()
  + Loads GUI depending on # of players
* actionPerformed(ActionEvent ae)
  + Calls Connect Method
  + Calls Send Method
* connect()
  + Connects to server and launches waitPlayer method
* send()
  + sends message to server
* createChatPanel()
  + creates chat interface
* twoPlayer()
  + creates GUI for two players
* threePlayer()
  + creates GUI three players
* fourPlayer()
  + creates GUI four players

Server

* Main Method
  + Calls Default Constructor
* Constructor
  + Creates server GUI
  + generateRandomNumber()
  + connect()
* ThreadClient (inner class)
  + Run method creates thread for each client and handles all messages
* updateUserArea()
  + Update connected user list
* sendUserList(int gameIndex)
  + sends user list to each player
* actionPerformed(ActionEvent ae)
  + Send action
  + Disconnect action
* connect()
  + opens server and waits for client connection
* generateRandomNumber()
  + Randomizes sequence of picture placement
* getImagePath(String playerNumber, String gameType)
  + gets image path depending on # of players, and picture type

<Project> UML

\*Could not download ArgoUML\*

NewClient (class)

* twoPlayers()
* threePlayers()
* fourPlayers()
* GetThePicture()
* actionPerformed()
* changeProgressBar()
* GUI()
* NewClient()
* waitPlayer()
* loadBoardPanel()
* connect()
* send()
* createChatPanel
* firstInputPanel

ThreadClient(inner class)

* run()

Server (class)

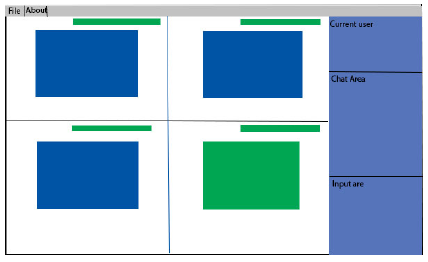
* server()
* updateUserArea()
* sendUserList(int)
* actionPerformed()
* getImagePath(String, String)

ThreadServer(inner class)

* ThreadServer(Socket)
* run()

# Client GUI

*Proposed Design*



# 

# Protocols

IP address: 129.21.25.10

Port number(s): 16888

Protocol interface code for both client and server:

The server will keep track of all clients’ moves and chat records, and will add and display new users to the current user list. The server will also detect if any client in the list disconnects with the server.

Code provided in folder.

**Chat interaction between Clients and Server.**

*The server will be started on a RIT IP address on socket 16888. The server will be up until closed. The server will be accepting up to 4 connections for players, and create new games for additional players. Each client that connects will be listed in a text area and can communicate within the current game with its players without interfering other games. The players shown in the user area will be updated if a player is added or exited the game. Clients will be able to chat and game information and status will be sent out to the server for records. The chat area is for client chat content display, and the input area will be where clients type and send information.*

| **Client** | **Communication** | **Server** |
| --- | --- | --- |
| Has not started | No data, accepting connections | Startup |
|  |  | Waits for client to connect  Accept connection |
| Client connection | Connection, no data 🡪 |
| Client sends ….. | <some information> 🡪 | Server reads info |
| Prints out info in Gui | Echoes information | <some process on info> |
| Client receives <info> | 🡨 <some information to [one/all] client(s)> | Sends message to client(s) |
| Client prints out info |  |  |
| Another Client connects | Connection, no data 🡪 | Accepts Connection |
| Player selects picture | Sends that information | Server acknowledges selection |
| 2nd player selects picture | Sends that information | Server acknowledges selection |
| Game starts | Moves and Progress information | Server reads movements and actions |

# Data used

*We will be using pictures from sports, games, music and scenary. Within each category, there will be four specific image type. For example, if player choose music, there will be four specific image for music like gaga, bieber, micheal, and Taylor. The URLS of the picture source will be posted below. Each will be sized down, and cut up to match the buttons depending on how many players are playing the game.*

sports:

1: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=kLGj1zY6vfC5rM:&imgrefurl=http://vlsportysexycool.com/2012/04/29/sundays-best-scintillating-portraits-of-pro-athletes-part-2/manny-pacquiao-2/&docid=rjV1FWDfYJ_aYM&imgurl=http://vlsportysexycool.com/wp-content/uploads/2012/04/Manny-Pacquiao-2.jpg&w=550&h=565&ei=g_BeUcXJIq7D4APo-IH4BQ&zoom=1&ved=1t:3588,r:26,s:0,i:172&iact=rc&dur=625&page=2&tbnh=214&tbnw=201&start=23&ndsp=31&tx=127&ty=103&biw=1280&bih=843>

2: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=gohak7jto6bCUM:&imgrefurl=http://stuffpoint.com/cars/image/152738/&docid=X6SexjfagD53hM&imgurl=http://stuffpoint.com/cars/image/152738-cars-tuning-sport-car.jpg&w=800&h=520&ei=_fBeUcjNH4vC4AOZ6IA4&zoom=1&ved=1t:3588,r:12,s:0,i:126&iact=rc&dur=2131&page=1&tbnh=181&tbnw=248&start=0&ndsp=19&tx=150&ty=92&biw=1280&bih=843>

3: <http://good-wallpapers.com/music/20342>

4: <https://www.google.com/search?hl=zh-CN&biw=1280&bih=843&site=imghp&tbs=isz%3Alt%2Cislt%3Avga&tbm=isch&sa=1&q=bolt+runner&oq=bolt+runner&gs_l=img.3..0i19j0i5i19.17452.19046.0.19448.11.11.0.0.0.0.94.625.11.11.0...0.0...1c.1.8.img.8Js1VK1iWJ0#imgrc=IEHDiH3pSebWxM%3A%3BD2x9-LzsfhCxaM%3Bhttp%253A%252F%252Fwww.bloomberg.com%252Fimage%252FiqL5DAhywZos.jpg%3Bhttp%253A%252F%252Fwww.bloomberg.com%252Fnews%252F2012-08-09%252Fhungary-germany-win-two-gold-medals-at-london-olympic-games.html%3B640%3B482>

games:

1: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=FmPq05EHIrROAM:&imgrefurl=http://www.fanpop.com/clubs/super-mario-bros/images/5314181/title/new-super-mario-brothers-wallpaper&docid=_2G75L2NwsE6yM&imgurl=http://images2.fanpop.com/images/photos/5300000/New-Super-Mario-Brothers-Wallpaper-super-mario-bros-5314181-1280-1024.jpg&w=1280&h=1024&ei=cPJeUdKFIJDl4APvoIGYDQ&zoom=1&ved=1t:3588,r:9,s:0,i:117&iact=rc&dur=1152&page=1&tbnh=182&tbnw=241&start=0&ndsp=25&tx=126&ty=101&biw=1280&bih=843>

2: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=wZBgHmT9OSf9VM:&imgrefurl=http://vudzo.deviantart.com/art/League-Of-Legends-VudzO-FanArt-330348734&docid=Ns7ghKKTF3dirM&imgurl=http://www.deviantart.com/download/330348734/league_of_legends_vudzo_fanart_by_vudzo-d5goipq.png&w=1680&h=1050&ei=jfJeUYziD7O84AP4poHADQ&zoom=1&ved=1t:3588,r:3,s:0,i:98&iact=rc&dur=1210&page=1&tbnh=177&tbnw=284&start=0&ndsp=16&tx=123&ty=92&biw=1280&bih=843>

3: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=r4HpHNyBPsal2M:&imgrefurl=http://www.gamefront.com/top-10-best-counter-strike-mods/&docid=JXBMFlC4XtlmBM&imgurl=http://cdn2.gamefront.com/wp-content/uploads/2011/10/counter-strike-10-04-2011.jpg%253Fcda6c1&w=1600&h=1200&ei=wPJeUf3XDPO24AO86oHwCA&zoom=1&ved=1t:3588,r:0,s:0,i:86&iact=rc&dur=1112&page=1&tbnh=180&tbnw=241&start=0&ndsp=20&tx=181&ty=100&biw=1280&bih=843>

4: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=yButo4oHJUHL_M:&imgrefurl=http://wallpup.com/wallpaper/game-starcraft-2-wallpaper.html&docid=PU4P2kRak17kkM&imgurl=http://wallpup.com/wp-content/uploads/2013/03/Game-Starcraft-2-Wallpaper.jpg&w=1920&h=1200&ei=2PJeUaaVGLi24API9IGgBw&zoom=1&ved=1t:3588,r:59,s:0,i:270&iact=rc&dur=2817&page=3&tbnh=177&tbnw=279&start=45&ndsp=25&tx=104&ty=88&biw=1280&bih=843>

music:

1: <http://www.google.com/imgres?start=299&hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=Saw8gzDx_Wu5tM:&imgrefurl=http://mymajicdc.com/3066978/michael-jackson-liberian-girl-video/&docid=zhHNes0Y7yMgUM&imgurl=http://ronemymajicdc.files.wordpress.com/2012/08/photo-the-thriller-era-michael-jackson1.jpg&w=1600&h=1144&ei=F_NeUeDTNa_D4APp3YHAAg&zoom=1&ved=1t:3588,r:4,s:300,i:16&iact=rc&dur=543&page=10&tbnh=175&tbnw=257&ndsp=33&tx=173&ty=115&biw=1280&bih=843>

2: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=YBWsuxfjZUW_CM:&imgrefurl=http://africanlimelight.com/entertainment/lady-gaga-sells-out-twickenham-stadium-in-ten-minutes/&docid=ULMaWyGp0pm42M&imgurl=http://africanlimelight.com/wp-content/uploads/2012/04/LadyGaga-4.jpg&w=720&h=485&ei=RfNeUYP-Nq7l4AOImoHwAw&zoom=1&ved=1t:3588,r:43,s:0,i:227&iact=rc&dur=237&page=2&tbnh=179&tbnw=265&start=24&ndsp=29&tx=205&ty=64&biw=1280&bih=843>

3: <http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=gYUlW2a2UWOSCM:&imgrefurl=http://www.fanpop.com/clubs/believe-justin-bieber/images/31113719/title&docid=JDSrPYJ1_gXyeM&imgurl=http://images5.fanpop.com/image/photos/31100000/Justin-Bieber-As-Long-As-You-Love-Me-believe-justin-bieber-31113719-2307-2307.jpg&w=2307&h=2307&ei=gPNeUb79Joni4APO_oDgCw&zoom=1&ved=1t:3588,r:35,s:0,i:202&iact=rc&dur=235&page=2&tbnh=204&tbnw=210&start=27&ndsp=32&tx=133&ty=90&biw=1280&bih=843>

4:<http://www.google.com/imgres?hl=zh-CN&tbs=isz:lt,islt:vga&tbm=isch&tbnid=l1wY0eQCpULPzM:&imgrefurl=http://www.dosomething.org/category/tags/taylor-swift&docid=ZGV1rnPGU9Ew3M&imgurl=http://www.dosomething.org/files/pictures/actionguide/Taylor-Swift-Wallpapers-4.jpg&w=1600&h=1200&ei=rfNeUe-1L-XC4APD2oDgAQ&zoom=1&ved=1t:3588,r:23,s:0,i:167&iact=rc&dur=847&page=1&tbnh=166&tbnw=192&start=0&ndsp=27&tx=110&ty=93&biw=1280&bih=843>

scenary:

1:  <http://www.google.com/imgres?hl=zh-CN&tbm=isch&tbnid=jjV2Hqj8i-zaOM:&imgrefurl=http://www.phombo.com/wallpapers/vector-scenary-wallpapers-1600-x-1200/780240/full/&docid=FVTZsmo0Xav6eM&imgurl=http://img.phombo.com/img1/photocombo/6365/80_Vector_Scenary_Wallpapers_1600_X_1200-70.jpg_37.jpg&w=1600&h=1200&ei=s-5eUfSzGfbJ4API5oDYAQ&zoom=1&ved=1t:3588,r:10,s:0,i:114&iact=rc&dur=706&page=1&tbnh=182&tbnw=234&start=0&ndsp=20&tx=162&ty=61&biw=1280&bih=843>

2:  <http://www.google.com/imgres?hl=zh-CN&tbm=isch&tbnid=9CA0eX07K9qXuM:&imgrefurl=http://scenarysnaps.blogspot.com/2011/05/scenary-snaps-441.html&docid=-a6qJ13nFC4bQM&imgurl=http://4.bp.blogspot.com/-LJXvGwDGJiY/Tc_wNFz6bkI/AAAAAAAAA_M/wxf8d2yaY_4/s1600/garden_wallpaper_garden_staircase_japan_wallpapers_5664_1152x864.jpg&w=1152&h=864&ei=s-5eUfSzGfbJ4API5oDYAQ&zoom=1&ved=1t:3588,r:19,s:0,i:141&iact=rc&dur=5428&page=1&tbnh=174&tbnw=211&start=0&ndsp=20&tx=144&ty=101&biw=1280&bih=843>

3: <http://www.google.com/imgres?hl=zh-CN&tbm=isch&tbnid=Go3r7Pe3S95MCM:&imgrefurl=http://sitara2984.deviantart.com/art/Scenary-1-34132173&docid=0tszEHEUYAzx0M&imgurl=http://th01.deviantart.net/fs9/PRE/i/2006/152/a/2/Scenary_1_by_sitara2984.jpg&w=1032&h=774&ei=s-5eUfSzGfbJ4API5oDYAQ&zoom=1&ved=1t:3588,r:66,s:0,i:290&iact=rc&dur=2226&page=3&tbnh=180&tbnw=224&start=43&ndsp=25&tx=116&ty=83&biw=1280&bih=843>

4: <http://www.google.com/imgres?hl=zh-CN&tbm=isch&tbnid=Or3hH5hvGchbBM:&imgrefurl=http://whynotdownload.com/2010/06/wallpaper-80-vector-scenary-wallpapers/&docid=dV0LCAWq65eRaM&imgurl=http://whynotdownload.com/wp-content/uploads/2010/06/80_vector_scenary_wallpapers.jpg&w=448&h=336&ei=s-5eUfSzGfbJ4API5oDYAQ&zoom=1&ved=1t:3588,r:78,s:0,i:326&iact=rc&dur=1949&page=4&tbnh=175&tbnw=259&start=68&ndsp=24&tx=109&ty=102&biw=1280&bih=843>

https://mail.google.com/mail/u/1/images/cleardot.gif

# Punch List used

*{These are some examples. Create a Punch List of your own and keep it up to date. Move items from the To Do to the Done when completed. It helps encourage you that progress is being made and tasks are being completed.}*

## *To do:*

## *Done:*

* *Game base structure for storing and sending multiplayers’ information*
* *Accepting new players, and create additional games based on number of players.*
* *Client GUI base structure for different players.*
* *Server GUI functionality.*
* *Determining the size of pictures depending on # of players*
* *Cut up pictures to fit button sizes*
* *Set up GUI*
* *Set up chat client*
* *Set up server*
* *Project Gantt chart*
* *Figure out algorithm of progress bars change*
* *Decided pictures that will be used*
* *Decided how pictures, JProgressBar, Time label will be updated.*
* *Add functionalities to actionsPerformed to*
* *validate the picture move.*
* *switch pictures*
* *check progress and update proressbar*
* *send information to other players for GUI update*
* *Server tracks game statuses*
* *Update time label, JButtons and JProgressbar of each player*
* *Declare winner*

# Unresolved Issues

* *If a player disconnects before game starts or during game, player b controls player a’s buttons. (sovled)*
* *Original picture button does not show after someone disconnects (solved)*
* *When disconnecting, the last person who disconnects from a game is not removed from server list (Game 1 has 3 players, player B and C disconnects, they are removed from list, when A disconnects, A is not removed from list) (solved)*
* *Server list needs to add game number and players (solved)*