Date: **MON 27 APR 2015**

CISC 193 – C#

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**FINAL PROJECT: DA BIG BREAK**

**=== DUE WED 13 MAY === (25 POINTS + 5 Q-FACTOR BONUS POINTS!)**

**================**



**Write NAME, POINTS, STARS, Q-FACTOR:**

**YOUR NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**# OF ITEM POINTS (0 – 30): \_\_\_\_\_\_\_ / 6 = \_\_\_\_\_\_\_ (0 – 5)**

**From page 11**

**# OF FP ITEM POINTS (0 – 20): \_\_\_\_\_\_\_\_ (0 – 20)**

**From page 11**

***CUMULATIVE TOTAL POINTS*: *\_\_\_\_\_\_\_\_ (0 – 25)***

***Is there a 5 point reduction for no progress demo? ADJUSTED CUMULATIVE POINTS: \_\_\_***

**COMPLETED STARS: \_\_\_\_\_\_\_\_\_\_**

**From page 11 Q-FACTOR: \_\_\_\_\_\_\_\_ (Your self-assessment)**

***Q-FACTOR: (Colleagues’ views)***

***Q-FACTOR: (Professor’s view)***

**Q-FACTOR (0 to 5) based on overall quality of program efficiency/elegance & game-play/creativity**

**Be prepared to explain during your class demo how your program demonstrates these qualities**

**0 –** First, read this Task Sheet!

**Second, for each TASK item – including STARS (NO DOUBLE-DIPPING!) – you MUST indicate:**

* **If you completed ALL of it (100%)**
* **If you completed AT LEAST HALF but not all of it (>50%, but < 100%)**

**Clearly write your Point and STAR totals on page 11 & 1 and hand in THIS page 1 AND page 11**

**CAUTION: If you overestimate, then the grade will be reduced by 3\*overestimate**

**If you are working on a team, then also include the name(s) of the person(s) who worked on the TASK item and STAR. NOTE: On teams, POINTS/STARS are for TASK, not for each person**

**1 –** **READ**: **TDHs and TDB**

**2 –** **PROGRAM OBJECTIVES**

* Design a C# program to integrate streamlined, custom methods with parameters
* Incorporate key events, collision detection and basic animation
* Create multiple forms with information passed among them

**3 – SPECIFICATIONS (Creating a project called *Larry*sBigBreak)**

**Complete: ITEM #1 - #30 (5 points) and FP ITEM #1 - #20 (20 points)**

Develop a simplified version of the classic “Breakout” game. Plan to have one row of four “bricks” across the top of the form, a “paddle” near the bottom of the form and a “ball” near the center of the form. As the ball falls, use the paddle to bounce the ball up toward the bricks. When the ball slams into a brick, score a point and have the brick disappear. The game ends when all the bricks have been hit by the ball OR the ball drops to the bottom of the screen (when the paddle does not hit the ball). For different versions: <http://www.hypergurl.com/onlinegames/breakout.shtml>

<http://www.bigfishgames.com/games/2138/ricochet-infinity/?pc>

1. A **“splash page” form** entitled “Welcome to Da Big Break with Larry!” that displays a captivating and enticing message to encourage the user to play Breakin’ Out. Use engaging graphics/images with a big, bold, beautiful and legibly colored font. **ITEM #1**
2. A **“welcome” form** to greet the user with effective graphics and text along with:

* Prominently display the **game name** “Breakin’ Out with Larry!” **ITEM #2**
* The current **date and time** **ITEM #3**
* An **instruction** button that displays a message box showing the instructions for using this application **ITEM #4**
* A **login** textbox for the user to enter a valid account number (= 1111 for Albert Einstein, 2222 for Madame Curie, 3333 for you and 4444 AND 5555 for someone you admire). After entering the account number, check to see if it is valid. If it is, acknowledge it with a friendly message that displays the user’s account number and name. If it is not a valid account number, display a friendly “error” message that the entry is not valid and to re-enter the information. **Play an upbeat, approving sound when the player enters a valid account number and a disapproving sound otherwise. ITEM #5**

**BTW: NO DOUBLE-DIPPING ON ANY STARS DONE ON PREVIOUS ASSIGNMENTS!!!**

**STAR#1: Have the login occur in another form with compelling graphics and text**

**STAR#2: If the player re-enters invalid information three more times, then display a message that the application will terminate and then activate the “Exit” button**

**STAR#3: Expand the previous STAR to display a message that warns the player when there is only one more chance to enter the correct account number. Keep track how many times the player’s account number is invalid and display it after the player finally enters a valid number**

**FP ITEM #1: Add a “password” feature – with “breakout” and “master” as the two valid passwords. Handle valid and invalid data in reasonable ways. Proceed only if both the account number and the password are valid. Otherwise, alert user about the invalid data**

**STAR#4: Give the user the option to change the password and use it in the subsequent login.**

**STARS#5/#6(2): Maintain a “database” on disk of all valid account numbers and associated account holders’ names**

**STAR#7: Add a feature to the previous STAR to add entries to the database for new account holders**

* After successful login, have user enter the **alias** of the player **ITEM #6**
* On each side of the game name, “Da Big Break with Larry!”, have a timer **animation** displaying interesting animations in picture boxes. **ITEM #7**
* An **exit** **button** which displays a friendly **farewell** message thanking and saying farewell to the user by account name, displaying the number of games played and the total number of games won by the player in a message box and playing a farewell sound or music. **ITEM #8**

**FP ITEM #2: Also display the cumulative number of points for the player and the average number of points per game.**

**FP ITEM #3: In the farewell message display the elapsed time of the entire session in minutes and seconds**

* After closing the farewell message box, display another message box (or more) with your **ID INFO**, **CREDITS** (of whom you helped, who helped you as well as any tutorials, websites, etc. used) and **MEDIA**. In **MEDIA** have a **GRAPHICS** section and an **AUDIO** section. Include 3 types of info in these two sections: A brief description or title of the resource, your actual file name for the resource AND the specific URL for locating the resource

**ITEM #9**

* THEN display one final message box to briefly identify in a numbered list which STARS you completed AND your total number of STARS. If you did NO STARS, then indicate so. **ITEM #10**

**NOTE: You can earn STARS only for those which are numerically listed in this MessageBox along with the TOTAL NUMBER**. **Display your STARS in the following format:**

**FINAL PROJECT Da Big Break STARS**

1. **In farewell, display start, end and elapsed time**
2. **Extra pizzazz – (and describe what you did)**
3. **Blah-blah-blah**

**TOTAL STARS = 3**

**FP ITEM #4: After displaying the STARS information, close the application**

**STAR#8: Have the exit button farewell information displayed NOT in a message box, but in another form with big, bold and beautiful fonts, colors and graphics**

**STAR#9: Expand the previous STAR to include the ID INFO, etc.**

**STAR#10: In farewell display start time, end time and elapsed time**

**STAR#11: After the STARs, instead of closing the application, use a message box with a YES/NO choice to ask the user about continuing playing another game**

1. After logging in, proceed to the **“play” form (ideally 1280 x 1024, max)**

* Display an effective **background image** on the form to harmonize with the theme of the game **ITEM #11**
* A **thank you** message with the player’s alias **ITEM #12**
* **4 picture boxes** for the “bricks” in the row near top of the form **ITEM #13**

**FP ITEM #5: Use two rows with 8 picture boxes of bricks**

**STARS (1+): Add extra pizzazz to the number, configuration and shape of the “bricks” and rows**

* **1 picture box** for the “ball” **ITEM #14**
* **1 picture box** for the “paddle” **ITEM #15**

**STARS#12/#13(2): Instead of picture boxes, use Graphics to draw ball, paddle and bricks**

* The same **exit** **button** as in the **welcome** form **ITEM #16**
* A **play** **button** that:
  1. “Removes” unnecessary items **ITEM #17**
  2. Resets everything appropriately **ITEM #18**
  3. Prominently displays the **current game number** (starting at #1), **the player’s alias, the current score (assume one point per brick) of the game and the number of games won so far by the player ITEM #19**
  4. The player uses the left and right arrows to move the paddle. When the ball collides with a brick, an effective sound is played, the brick disappears and the player gets 1 more point. **ITEM #20**

**STAR#14: Have various bricks count for different point values**

**FP ITEM #6: On two of the bricks, require the ball to collide with these two bricks 3 times before they disappear and the player gets the point**

**STAR#15: Expand the previous ITEM to have a “cloud” of points descend and if player hits it with the ball, player gets those points**

**FP ITEM #7: Give user the option to keep track for each game how many times the paddle has hit the ball and how many times the ball has made contact with bricks. Display during game-play these numbers plus the percentage of times the ball has made contact with bricks**

**FP ITEM #8: Instead of the arrow keys, use the mouse to control the paddle (This replaces part of ITEM #20 above)**

**STAR#16: Add a “power-up” feature to equip paddle with lasers or add other nifty features**

* 1. Has the ball bounce off of the paddle based on the angle they collide or the part of the paddle which is hit and play a distinctive sound different from other sounds **ITEM #21**
  2. Has the ball bounce off the “walls”/ceiling, but game ends when ball hits the “floor” OR the player has hit all the bricks. Have distinctive sounds different from other sounds for each of these three situations. **ITEM #22**
  3. Has the game end with the announcement of whether or not the player won and updates the number of games won and games played **ITEM #23**

**FP ITEM #9: Display how much time in minutes and seconds it takes the player to complete the current game**

**STAR#17: Display the history of all the playing times**

**STARS#18/#19(2): Create a disk file to record the history of all the playing times for all games and ALL sessions. Provide a way for the user to read from the disk file and display all the times.**

**STAR#20: Expand the previous STAR by also displaying the history sorted from shortest to longest times.**

**STAR#21: At the conclusion of a session (before exiting), display the quickest playing time in the session for completing a “won” game**

* 1. Displays a **continue button** after a game ends to reset the form for the next game to be played. Alternatively, use the **play button** to accomplish this. **ITEM #24**

1. Declare, define and deploy **lots of non-event driven, custom-methods**. Aim to create methods that have <= 25 lines of code (excluding comments) **ITEM #25**
2. **DO NOT USE global variables** for information appearing only in non-event driven methods **ITEM #26**

**STARS#22/#23(2): Create custom-designed classes for accommodating global variables and special methods**

**4 – SCREEN OUTPUT**

You have artistic license to create whatever is effective and dazzling

**5** – **SAVE** your file early and often – like every 5 minutes. And, use your backup “disk”

**6** – **TEST** your file early and often – like every 5 minutes – How do you eat an apple?

**7** – **MICHELANGELO PROGRAM DOCUMENTATION**

1. First, include in your C# code of **EACH FORM** via comments your complete **ID INFORMATION, PROGRAM DESCRIPTION**, separate **NON-EVENT** and **EVENT-DRIVEN CUSTOMIZED-METHODS** lists (in alphabetical or other order – of only the customized methods declared in the Form), **CREDITS** (to those who helped you and whom you helped) and **MEDIA** (all graphic and audio resources with specific URLs). **ITEM #27**
2. Include a “START CUSTOMIZED METHODS” banner at beginning and add an “END CUSTOMIZED METHODS” banner at the end. **Keep all the non-event driven methods in one section and event driven methods in another**. **ITEM #28**
3. Before each method “signature”, include a distinguishing “border/banner” containing the: **ITEMS #29 & #30**

* **NAME** of the method
* **DESCRIPTION** of the method’s purpose that connects with all the parameters and clearly indicates what data is returned

**THE REST OF THIS TASK IS A STAR#24:**

1. Expand C. to include for non-event driven methods a CALLS list and a CALLED BY list
2. Use lots of comments in eye-catching ways with blank lines and appropriate indenting. Use identifiers for constants, variables, etc. that are self-explanatory. No abbreviations, code names or “magic numbers”. Use verbs for naming methods!
3. Include “inline credits” to acknowledge those who helped you.
4. Add comments to describe “highlights” of any coming attractions (IF you use any). Insert at least one blank line before each of these comments.
5. Provide comments to describe any special code. Unusual features and any STARs
6. Add “banners” for all your constant declarations/definitions and all your variable declarations – all of which appear at the beginning of a section/method

**8 – REST OF THE FP ITEMS:**

**FP ITEM #10: After every three times the ball hits the paddle, increase the speed of the BALL a bit more**

**FP ITEM #11: After the player successfully hits all the bricks, add another “level” of play – like more rows and columns of bricks or ???**

**FP ITEM #12: Expand the previous ITEM to create a 3rd level**

**FP ITEM #13: Add “cheat” codes to advance to each successive level**

**FP ITEM #14 & #15: Have a “High Score” feature that displays the players’ names and their scores from high down to low (based on whatever system you prefer: fastest time to complete a level or all levels or a point system or level completed or ??). Maintain the information by writing and reading the players’ names and scores to and from a text disk file.**

**FP ITEM #16: Give the player 3 lives to extend play for a game**

**FP ITEM #17: Offer player the option to change the size or shape of the paddle and ball**

**FP ITEM #18: When player wins a game, play an interesting “victory” timer animation and celebratory sound**

**FP ITEM #19: When player loses a game, play an interesting “defeat” timer animation and sound of dismay**

**FP ITEM #20: Add an interesting feature or pizzazz to your game and indicate what you did**

**9** – **DEMOS** **–**

1. **CLASS DEMO OF WORK-IN-PROGRESS WED 6 MAY**
2. **FINAL DEMO – On podium computer showcasing to class WED 13 MAY**

***ALERT: Not completing #9A in a non-trivial way will reduce the FINAL PROJECT GRADE by 5 (out of 25) FINAL PROJECT POINTS!***

**FINAL PROJECT GRADE = (ITEM Points)/6 + FP ITEM Points + Q Points**

**(So maximum is 30/6 + 20 + 5 = 25 + 5 = 30)**

**10** – **HARDCOPY** – ***Hand in completed pages #11 and #1, else grade = 0***

***And your completed and accurate TIMESHEET***

**11 – MANAGER’S STATUS REPORT – STAR#25**

**Manager’s Status Report** – Word process with at least one good-sized paragraph for each answer, **along with effective clip art in each paragraph:**

1. Identify any relative hurdles, challenges and frustrations you encountered in C# on this PROGRAM and describe how you dealt with them.
2. Identify a part of the PROGRAM that you were proud of completing, explain what you learned from it and why you were proud
3. Describe how you helped others on this PROGRAM. Give details. If you did not help anyone, then have someone demo their project and describe what you liked about it and your suggestions for enhancing it. Give the name(s) of the student(s) for either situation.
4. Describe how you were helped by others on this PROGRAM. Give details. If you were not helped by anyone, then have someone demo your project and describe what he/she liked about it and his/her suggestions for enhancing it. Give the name(s) of the student(s) for either situation
5. Identify each **STAR** you did **and** display the total number of **STARS**
6. Include your **TASK TIMESHEET** with the completed information

**12** – **STARS (SOME ARE WORTH >1 BASED ON MUTUAL FEEDBACK):**

* 1. Make your second and third levels “pizzazzy”, not plain pizza
  2. Once the player has beaten a second or greater level, have a bonus level appear with a hockey stick and 5 seconds to knock the ball into a “net”
  3. Have the bricks move side to side during game play
  4. Have the bricks move down during game play and if a brick reaches the bottom, then game over
  5. Provide ability to have more than one ball in play
  6. When the ball hits a brick, have the ball change color
  7. Add a “razzle-dazzle” option that makes ball move in a curved not straight path
  8. Visit websites that offer free versions in the Breakout theme. Share the URLs and screenshots of three of the versions that you found really spectacular and explain what features you especially liked and why
  9. Incorporate an interesting feature from the previous STAR (that was not yet in your game) into your PROGRAM
  10. In **FP ITEM #6** have the two special bricks be in different colors and change color every time they are “hit” to correspond to the number of times being hit
  11. Associate different point values for each brick
  12. Add a time constraint so that the game automatically ends by that time.
  13. Give the player a choice of the images used for all the bricks
  14. Have random points in space which send the ball into another random location
  15. Add a random spin to the ball after it hits one part of the paddle
  16. Add gravity/friction to the ball as it travels
  17. Have bricks change color and assume greater point value over time
  18. Instead of bricks disappearing upon impact with ball, show animated explosion
  19. Add a side-scroller level for the background ala Super Mario
  20. Create “challenges” like winning 3 games in a row to earn bonus points
  21. Use sine and cosine for more realistically computing the path of the ball
  22. Add a “boss” level with lower row of bricks regenerating and goal is to destroy all of the bricks on the highest row
  23. Introduce a “creature” moving around that “eats” the ball
  24. Let player initially choose among “easy”, “medium” and “hard” mode of playing. NOTE: This is different from having 3 levels. In the three modes of play, perhaps you can adjust the paddle size and ball speed and other features
  25. Add a feature to enable the player to “aim” and shoot at a brick
  26. Add “flippers” to configure gameplay like in a “pinball” machine
  27. Use a random number generator to select the layout of the different images for the bricks (to appear in random, non-repeating patterns)
  28. In level “3”, replace the rectangular bricks with a series of different shapes, like triangles, hexagons, etc. of different colors
  29. Have a history button that displays the history of the immediate game moves, like picture boxes of the bricks disappeared in the following order: 3, 2, 4 and 1.
  30. Based on the previous STAR, add an “instant replay” feature for the game that simulates the way the bricks disappeared
  31. Keep track of the total history of all the games and display the results
  32. Visit websites that offer free versions in the Breakout theme. Share the URLs and screenshots of three of the versions that you found really spectacular and explain what features you especially liked
  33. Implement one or more of the spectacular features of the previous STAR that you game did not already have
  34. Incorporate >=2 “Advance” features (concepts not yet introduced)
  35. Invent your own ideas and implement them, but be sure to okay them with me

**The one thing that matters is the effort.**

**~Antoine de Saint-Exupéry**

**I’m a great believer in luck,**

**and I find the harder I work the more I have of it.**

**~Thomas Jefferson**

**I’ve got a theory that if you give 100 percent all of the time, somehow things will work out in the end.**

**~Larry Bird**

**When I was young, I observed that nine out of ten things I did were failures.  So I did ten times more work.**

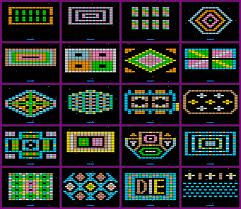
**~George Bernard Shaw**

**There’s nothing like biting off more than you can chew, and then chewing anyway.**

**~Mark Burnett**

**Most of us can easily do two things at once; what's all but impossible is to do one thing at once.**

**~Mignon McLaughlin**



**YOUR NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**CISC 193 SPRING 2015 FINAL PROJECT GRADE SHEET**

**In each of the three categories below – ITEMS, FP ITEMS and STARS – clearly identify which ones you completed 100% with “y” (for “yes”) and which ones you completed less than 100% but at least 50%, with “p” (for “partial”):**

**(ALERT: For every misdiagnosed score, three times the score will be lost)**

**ITEMS**

**ITEM#1: \_\_ ITEM#2: \_\_ ITEM#3: \_\_ ITEM#4: \_\_ ITEM#5: \_\_ ITEM#6: \_\_**

**ITEM#7: \_\_ ITEM#8: \_\_ ITEM#9: \_\_ ITEM#10: \_\_ ITEM#11: \_\_ ITEM#12: \_\_**

**ITEM#13:\_\_ ITEM#14: \_\_ ITEM#15: \_\_ ITEM#16: \_\_ ITEM#17: \_\_ ITEM#18: \_\_**

**ITEM#19:\_\_ ITEM#20: \_\_ ITEM#21: \_\_ ITEM#22: \_\_ ITEM#23: \_\_ ITEM#24: \_\_**

**ITEM#25:\_\_ ITEM#26: \_\_ ITEM#27: \_\_ ITEM#28: \_\_ ITEM#29: \_\_ ITEM#30: \_\_**

**# of y’s = \_\_\_\_ # of p’s = \_\_\_\_**

**ITEM TOTALS: \_\_\_\_\_ (Each “y” is worth 1 point; each “p” is worth ½ point)**

**ITEM TOTALS / 6 = \_\_\_\_\_ contributes to your “Final Project Points”**

**FP ITEMS**

**FP ITEM#1: \_\_\_ FP ITEM#2: \_\_\_ FP ITEM#3: \_\_\_ FP ITEM#4: \_\_\_ FP ITEM#5: \_\_\_**

**FP ITEM#6: \_\_\_ FP ITEM#7: \_\_\_ FP ITEM#8: \_\_\_ FP ITEM#9: \_\_\_ FP ITEM#10: \_\_\_**

**FP ITEM#11: \_\_\_ FP ITEM#12: \_\_\_ FP ITEM#13: \_\_\_ FP ITEM#14:\_\_\_FP ITEM#15: \_\_\_**

**FP ITEM#16: \_\_\_ FP ITEM#17: \_\_\_ FP ITEM#18: \_\_\_ FP ITEM#19:\_\_\_FP ITEM#20: \_\_\_**

**# of y’s = \_\_\_\_ # of p’s = \_\_\_\_**

**FP ITEM TOTALS: \_\_\_\_\_ (Each “y” is worth 1 “Final Project Point**

**Each “p” is worth ½ “Final Project Point)**

**STARS**

**#1\_ #2\_ #3\_ #4\_ #5\_ #6\_ #7\_ #8\_ #9\_ #10\_ #11\_ #12\_ #13\_ #14\_ #15\_ #16\_ #17\_ #18\_ #19\_ #20\_ #21\_ #22\_ #23\_ #24\_ #25\_ #A\_ #B\_ #C\_ #D\_ #E\_ #F\_ #G\_ #H\_ #I\_ #J\_ #K\_ #L\_ #M\_ #N\_ #O\_ #P\_ #Q\_ #R\_ #S\_ #T\_ #U\_ #V\_ #W\_ #X\_ #Y\_ #Z\_ #AA\_ #BB\_ #CC\_ #DD\_ #EE\_ #FF\_ #GG\_ #HH\_ #II\_**

**STARS TOTALS: \_\_\_\_\_ (Unless otherwise noted by you, each “y” is worth 1 STAR and each “p” is worth ½ STAR)**

**NOTE: To get full STAR credit, need to have your STARS appear in your farewell**

**SPECIAL COMMENTS:**

**FINAL PROJECT GRADE = Points from ITEMS/6 + FP ITEMS + Q-FACTOR, subject to a possible 5-point reduction if did not showcase the FINAL PROJECT PROGRESS DEMO on May 6.**