**Course Work Answer Book**

**UNIVERSITY COURSE WORK**

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| REGISTRATION NUMBER | | | | | | | | | VU-BSF-2209-0796-DAY | | | | | | |
| Title of The Program (eg BBA, BSC, BPH, BSWA) | | | | | | | | | | | | | BSF | | |
| Bachelor of Science in Software Engineering | | | | | | | | | | | | | | | |
| Department | | | | Other Depts in Faculty of Science and Technology | | | | | | | | | | | |
| Faculty | Faculty of Science and Technology | | | | | | | | | | | | | | |
| Year Of study (YrI , YrII, YrIII, or YrIV) | | | | | | | | | | | 3 | | | | |
| Module Code and Name | | | | | | | 3123 ST | | | | | | | | |
| Computer Game Development | | | | | | | | | | | | | | | |
| Semester | | | 1 | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| Retake: | | Yes | | |  | | | No | |  | | (Tick whichever is applicable) | | | |
| Date of Course Work | | | | | | Fri Nov 15 2024 00:00:00 GMT+0300 (East Africa Time) | | | | | | | | | |
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| **DIRECTIONS TO CANDIDATES (Turn to page ii for more instructions).** | | | | | | | | | | | | | **FOR USE BY EXAMINERS ONLY** | | |
| **Question Number** | **Internal Examiner** | **External Examiner** |
| 1. Leave margin blank. 2. Begin each answer on a fresh page. 3. Write the number of each question and theCandidate's Number at the top of each page. 4. Write the numbers of the questionswhich you have attempted, with subsections where necessary, in the spacesprovided below | | | | | | | | | | | | |
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| **TOTAL** |  |  |

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| **NUMBER OF QUESTIONS** you have answered in the order in which you have written them | | | | | | | | |
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**How and where should I submit my Course Work script?**

Every student will be required to submit their Course Work via [VClass Students Portal](https://vclass.ac/) E.g. you go to [www.vclass.ac](http://www.vclass.ac) and login, to your account, then on the left sidebar menu **click on Course Work**.

Under Course Work you will see the following: -

1. Instructions for that particular Course Work with time required to finish your Course Work as per instructions,
2. A student will be required to download the question paper and the answer sheet provided by the university within the same module Course Work, or a student can be required to attempt structured questions within the system depending on how the Course Work was set.
3. Submission of answered questions is done,
4. Student is required to click to **consent** to show that the answered Course Work belongs to them.
5. **Note** that if Course Work is for download, a student will be required to download the question paper and answer sheet, do their Course Work within the given stipulated time.
6. Required to scan and upload back the answered booklet through the same portal as per format available.
7. Course Work uploaded will directly be received by the Registry department.
8. Students here are required to use [VClass e-Learning system](https://vclass.ac)for all Course Work and for any failure they can contact the Registry department for guidance.
9. No late submission will be accepted.

**Avoid any malpractice because this will attract severe penalties such as invalidating the answered script whose consequences will attract retakes.**

Links:

Youtube**:** *https://youtu.be/wN7n0ZlAV8Q*

Gethub :

**Game Design Document: Brick Breaker**

**Game Concept**

Brick Breaker is a classic arcade-style game where players control a paddle to bounce a ball and break bricks. The objective is to clear all the bricks on the screen to win. The game is engaging with dynamic gameplay, responsive controls, and visual effects, ensuring a fun and exciting experience.

**Narrative**

The game doesn't follow a traditional story but embodies the classic "challenge and reward" structure of arcade games. Players must strategize and time their paddle movements to keep the ball in play, aiming to break all the bricks.

**Core Game Mechanics**

1. **Paddle Movement (Note)**:
   * Controlled using the **'A'** (move left) and **'D'** (move right) keys.
   * The paddle reflects the ball, allowing it to hit bricks.
2. **Ball Physics**:
   * The ball bounces off walls, bricks, and the paddle.
   * Losing occurs when the ball falls below the paddle.
3. **Brick Breaking**:
   * Bricks disappear when hit by the ball, with sound and visual feedback.
   * A counter tracks the remaining bricks.
4. **Game Progression**:
   * A timer tracks elapsed time.
   * A midway message encourages players when half the bricks are cleared.
   * Victory is declared when all bricks are broken.

**Rules**

1. **Winning Condition**:
   * Clear all 45 bricks to win.
   * A congratulatory message is displayed upon victory.
2. **Losing Condition**:
   * Letting the ball fall below the paddle results in a loss.
   * Players can restart the game after losing.
3. **Control Scheme**:
   * Paddle movement: **'A'** and **'D'** keys.
   * Start/Restart: Button click.

**Risks**

1. **Gameplay Stagnation**:
   * To mitigate monotony, visual effects (flashes on brick collision) and sounds were added.
2. **Player Frustration**:
   * Clear visual indicators (brick counter, midway message) and responsive controls reduce frustration.

**UI Design**

1. **Start/Restart Button**:
   * Central button to start or restart the game.
2. **HUD**:
   * Displays the timer at the top-center and the brick counter at the top-left.
3. **Messages**:
   * Midway encouragement and victory/congratulatory messages enhance player motivation.

**Architecture**

1. **Code Structure**:
   * Modular design with functions for resetting the game, handling paddle movement, ball physics, brick interactions, and visual effects.
2. **Pygame Framework**:
   * Utilizes Pygame for 2D graphics, sound, and input handling.
3. **Performance**:
   * Optimized to run at 60 FPS, ensuring smooth gameplay.

**Features Added**

1. **Visual and Audio Feedback**:
   * Bright flashes and sound effects for ball-brick collisions.
2. **Dynamic Background**:
   * Subtle color changes during gameplay to add variety.
3. **Enhanced Interactivity**:
   * Clear start/restart functionality.
   * Real-time updates to the brick counter and timer.