MIPS Binary Game

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Overview:

The Binary Game is a text based MIPS Assembly program that quizzes the player on binary and decimal conversions. The player can choose between two modes:

1. *Binary → Decimal*
2. *Decimal → Binary*

The player must correctly answer a series of randomly generated questions to advance through levels. The program uses ASCII based graphics for menus and game boards and the game includes sound effects for correct and incorrect answers.

Requirements:

Simulator:

- MARS 4.5 MIPS Assembler

Files Required:

- main.asm
- drawboard.asm
- convert.asm
- linevalidation.asm
- sound.asm
- SysCalls.asm

How to Run the Program:

1. **Open MARS**
   Launch the MARS IDE and go to File → Open
2. **Load the Program**
   Open every .asm file and ensure every file is listed at the top.
3. **Assemble the Program**
   Navigate to main.asm and click Assemble, or press F3.
4. **Run the Program**
   Click the Run button, or press F5. The Binary Game now appears in the console.

Playing the Game:

1. Main Menu

After launching the game, an ASCII based menu will appear that looks like this:

```
+=======================================+
|              BINARY GAME              |
|---------------------------------------|
|  1) Binary  ->  Decimal               |
|  2) Decimal ->  Binary                |
|  0) Quit                              |
|---------------------------------------|
|  Select Mode:                         |
+=======================================+
```

- Enter 1 for the Binary to Decimal Mode
- Enter 2 for the Decimal to Binary Mode
- Enter 0 to quit the program

2. Gameplay

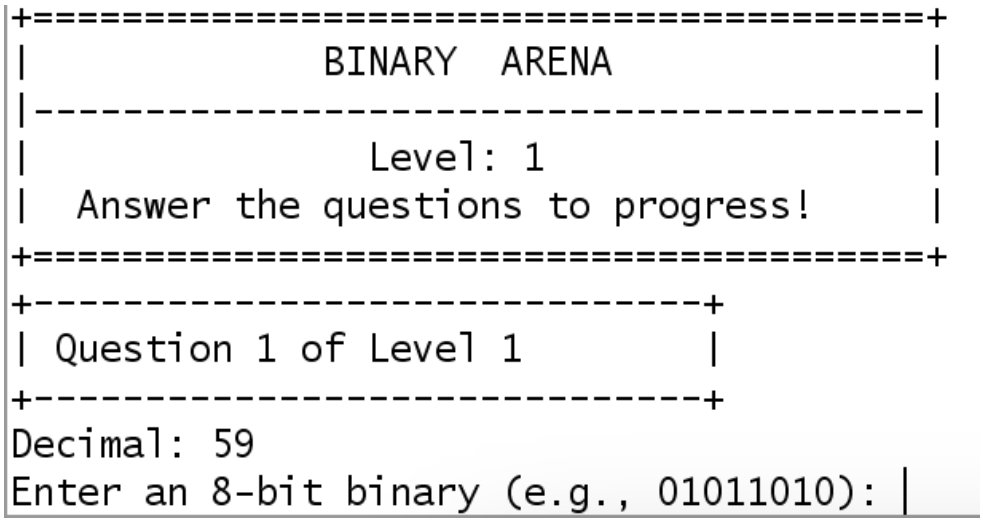
The screen will change to a new “Binary Arena” display for each level. The level number and question counter are displayed in the center of that. Each level contains as many questions as its level number (ex. Level 3 has 3 questions).

Binary to Decimal Mode:

```
+=======================================+
|             BINARY  ARENA             |
|---------------------------------------|
|               Level: 1                |
|  Answer the questions to progress!    |
+=======================================+
+----------------------------+
| Question 1 of Level 1      |
+----------------------------+
Binary: 01001100
Enter the decimal value (0..255):
```

The program displays a random 8-bit binary number as shown.
Type the correct decimal equivalent (ex. 201) and press Enter.

Decimal to Binary Mode:



The program displays a random decimal number.
Type the correct 8-bit binary number (ex. 10101010) and press Enter. Make sure you enter exactly 8 bits or the program will throw you an error message.

Feedback:
If your answer is correct, the message “Correct!” displays, and a short high pitched tone plays. If your answer is incorrect, the program displays the correct value and plays a low pitched tone. After completing all questions in the level, the game automatically will advance to the next level. After completing all 10 levels, the program will return to the main menu. From there, you can replay, or select 0 to exit.