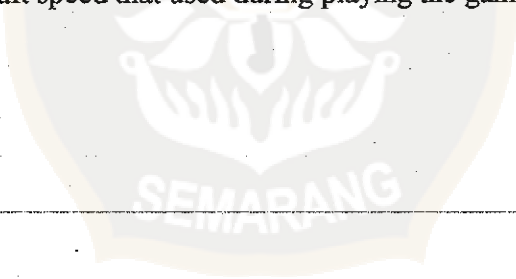


ABSTRACT

The one model of the PC (Personal Computer) game is flight simulator, where it movements can be moving forward or backward, stopping, and moving in all directions in 3 dimensional space.

In this application, the movements of the game to the background has been carried out by parallax scroll technique. It's also as main engine game that perform manipulating and splitting the background layer. The size of background layer could be bigger than display screen. Background layer have an unlimited size with black color, and the opponent game objects are 50 pieces of cubes in 3 dimensional space. Sound effect and colission effect between objects does not programmed. Requirement platform to operate the game are OS DOS 7.0., VGA 256 colors with 320 x 200 pixels resolution for video adapter, keyboard as input device, and processor at least Intel 486.

Game objects projected on 2 dimensional display screen. Matrix and vector operations used to object movement process. Depth sort method has been done to sort objects position based on minimum z-axis value from each objects. The View Volume Filter (VVF) technique and the Vertex Order Filter (VOF) technique used to adjust object on viewport area and prevent objects closing another. Color intensities for each objects arranged by ray tracing method that based on an angle and an object distance to observer. The game will be game over, if cruising range over than 15000 of range distance based on accumulation of aircraft speed that used during playing the game.



ABSTRAK

Salah satu model game PC (*Personal Computer*) adalah model simulator penerbangan. Dimana arah gerakannya dapat bergerak maju, berhenti, mundur, dan bergerak pada segala arah dalam ruang 3 dimensi.

Dalam penulisan ini, pergerakan game 3D terhadap latar belakang dilakukan dengan teknik *Parallax Scrolling*. Teknik parallax scrolling adalah mesin game utama yang melakukan manipulasi dan pemecahan latar belakang yang berukuran lebih besar dari layar monitor, sehingga objek game dapat bergerak ke segala arah. Latar belakang berukuran bebas, berwarna hitam, dan objek lawan berbentuk 50 balok. Efek suara dan efek benturan antar objek diabaikan. Game 3D model simulator yang dihasilkan dioperasikan pada sistem operasi DOS, monitor mode VGA 256 warna dengan resolusi 320 x 200 pixel, piranti kendali keyboard, dan *processor* PC minimal tipe Intel 486.

Proses penggerakan objek menggunakan operasi matriks dan vektor. Objek 3D game diproyeksikan pada layar monitor 2D. Pengurutan posisi objek dilakukan dengan *depth sorting* berdasar sumbu Z terdekat objek, agar objek tidak saling menutupi digunakan proses *Vertex Order Filtering* dan *View Volume Filtering*. Invers transformasi digunakan untuk melakukan gerakan relatif objek terhadap pengamat. Pengaturan intensitas warna pada objek menggunakan teknik pencahayaan, berdasar sudut dan jarak objek terhadap pengamat. Permainan game selesai jika jarak tempuh (*range*) mencapai 15000 satuan jarak, berdasar jumlah akumulasi penambahan kecepatan pesawat yang digunakan selama permainan.

