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Assignment-10.

Q1) write short notes on:

i) Motion specification.

→ i) The main issue with computer animation is describing the motion of an object in the scene. These methods used to apply motion are called motion control methods (MCM's).

ii) Various ways in which motions can be specified are:

a) Direct-motion specification:- In this, rotation angles & translation vectors are specified so that geometrical transformations can be applied to the object.

b) Goal-directed systems:- In this instead of specifying motion parameters, action specific instructions are specified.

c) Kinematics & dynamics: In this, motion parameters such as positions, velocity & acceleration are specified without reference to the forces that cause the motion to generate animation sequences.

2. Architecture of 8080

→ i) The intel 8080 (8086) was developed by intel. It is a RISC microprocessor.

ii) The design is mounted on a 32-bit ALU along with 8-bit FPU which was built in 3 parts - adder, multiplier and graphics processor.

iii) All the buses are atleast 8-bit wide. The internal memory bus to the cache was 12-bit wide.

iv) The CPU could execute majority of the floating pt operations either in pipeline or scalar mode.

v) The pipeline mode was executed in 3-4 stages & the

CPU could execute different stages of different instructions at the same time.

- v) One important feature was, the pipelines into the functional units were programmable, requiring compilers to order instructions carefully. wherein, traditional architectures, these duties were handled at run-time by a scheduler on the CPU, but they were more complex.
- vi) i860 is an attempt to avoid this by moving this duty off-chip into the compiler. this allowed i860 to devote more room to functional units, improving the performance.

③ Key-frame

i) Keyframe is the actual representation of the scene at certain time. Keyframe determines the position, scale & orientation of the object with its surface property for that particular time. To model abrupt changes over a short time, more keyframes have to be specified. Keyframe animation does interpolation to generate intermediate frames from given pair of frames.

- ii) The animator can control the number of intermediate frames.
- iii) More keyframes generate smooth animation.

④ Morphing

i) Morphing is a special effect in motion pictures / animations that changes one image into another through a seamless transition.



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- i) It is a transformation of object shapes from one form to another.
- ii) When object is described using polygon, keyframes for which in-between frames are to be generated, are compared.
- iii) They are compared on the basis of the no of vertices, edges & line segments. If they are unequal, they are added / deleted to match the count as pre-processing step.

⑤ NVIDIA gaming platform:-

- i) NVIDIA GPU computing is the use of GPU together with the CPU to accelerate general-purpose scientific engineering applications.
- ii) GPU + CPU is a powerful combination because CPU's consist of few cores optimized for serial processing while GPU's consists of thousands of smaller, more efficient cores designed for parallel performance.
- iii) NVIDIA gaming platform has a high level performance & provides the smoothest experience possible from the moment you start playing.
- iv) It enables developers to add amazing graphics effects.
- v) Dedicated ray tracing hardware enables fast real-time ray tracing with physically accurate shadows, reflections.
- vi) It also provides variable rate shading & faster frame rates.



② segment table.

- To access particular segment & the information associated with it, we must have a unique name associated to each segment.
- ii) Along with the name, we must have its display file position & its attribute information.
- iii) The structure used to organize all this information related to segments is called a segment table.
- iv) It indicates the position of display files used to construct the picture. The segment table is formed by using arrays.
- v) 1st array holds the display file starting location, 2nd array holds the second segment size information, the 3rd indicates the visibility and so on..
- vi) Each row represents information of one segment including its name, position, attributes, etc.

segment no.

0						
1						
e						
:						

segment start segment size scale x

③ design of animation sequence

- steps for designing animation sequence is as follows:-
- ① storyboard layout: It is the outline of the action. It defines set of basic events that are to take place in a specific order.
- ② Object definition: each active section of the scene is



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- Step 1: check whether the segment name is valid; if not display an error message & go to step 8.
- Step 2: check whether the segment is open; if yes display an error message & go to step 8.
- Step 3: check whether the size of the segment is greater than 0; if no, no processing is required, as segment contains no instructions. Go to step 8.
- Step 4: shift the display file elements which follow the segment which is to be deleted by its size.
- Step 5: Recover the deleted space by resetting the index of the next free instruction.
- Step 6: Adjust the starting positions of the shifted segments by subtracting the size of the deleted segment from it.
- Step 7: Stop.

(Q4) Write an algorithm to rename a segment. Draw sample segment table.

→ Algorithm:

- Step 1: check whether both old & new segment names are valid, if not display error message & go to step 6.
- Step 2: check whether any of the 2 segments are open. If open, display error message & go to step 6.
- Step 3: check whether the new name we are going to give to the old segment is not already existing in the display file. If yes, display error message & go to step 6.
- Step 4: copy the old segment table entry into the new position.
- Step 5: delete the old segment.
- Step 6: Stop.



treated as an object. It is defined in terms of basic shapes, like polygons or splines.

- (c) Keyframe specification: Keyframes represent extreme positions in the actions & others are spaced so that time interval between keyframes is not too great.
- (d) In-between frames: There are intermediate frames between the keyframes. Usually there are 3-5 in-between frames between 2 keyframes.

(e) Write algorithm to create a segment & delete a segment
 → Algorithm to create a segment

- Step 1: Check whether the any segment is open, if so display error message 'segment is still open' & goto step 9.
- Step 2: Read the name of the new segment.
- Step 3: Check whether the new segment name is valid. If not, display error message 'Not a valid segment' & goto step 9.
- Step 4: Check whether the new segment is already existing in the same-name list. If so display error message 'segment name already exists' and goto step 9.
- Step 5: Initialize start of the segment at the next free storage area in the display file.
- Step 6: Initialize size of this segment to 0.
- Step 7: Initialize all attributes of the segments to their default value.
- Step 8: Indicate that a new segment is now open.
- Step 9: Stop.

* Algorithm to delete a segment

- Step 1: Read the name of the segment that is to be deleted.

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seg,	name	seg start	seg. size	visibility
1		4	4	ON
2		5	5	ON
3		14	6	ON/OFF
4		18	7	OFF
5		21	5	ON.