

CMP 80c  
Winter 2001  
PRACTICE Examination #3

Name:

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**This is a CLOSED notes and books exam.** The keywords that include answers to the exam have not been posted yet, but will be by Tuesday. The exam is Thursday, March 14.

1	Keyframing and Interpolation	20	
2	Motion Graphs and Speed	10	
3	Character Animation	20	
4	Advanced Animation	10	
5	Process, Post-Processing	20	
6	Discussion	20	
	TOTAL	100	

The answers to all fill-in-the-blanks questions are in the lists on the final pages, unless otherwise stated in the question. Answers may be used more than once. Sometimes more than one answer in the list may be correct for a single question.

# 1 Keyframing and Interpolation (20 points)

1. Keyframes are created before inbetweens? True or False. \_\_\_\_\_.
2. Keyframe animation was first developed by what company early in the twentieth century? \_\_\_\_\_.
3. Be able to distinguish between linear interpolation and those that use curves. Know what effect this has on motion and timing.
4. When the animation includes fewer interpolated frames near keyframes (so that the animation appears to speed up there), this is called \_\_\_\_\_.
5. Transparent sheets used in compositing early 2D Disney-type animation are called \_\_\_\_\_.
6. Backgrounds in hand-drawn animation can be re-used by moving the characters across them. \_\_\_\_\_.
7. Splines that do not pass through all the points mentioned in the above question are called \_\_\_\_\_ splines.
8. Three parameters that can further adjust the path of a curve?
9. An animation method where the computer interpolates between two or more objects which have different shapes is called \_\_\_\_\_.
10. Points that determine where a continuous spline curve goes are called \_\_\_\_\_.

## 2 Motion Graphs and Speed (10 points)

Be able to draw motion graphs (positions over time) for these kinds of animated motion:

*No Motion, Constant Speed, Accelerating, Decelerating, Slow-In, Slow-Out.*

In general, know the relationship between key times, positions, number of inbetweens, and object speed.

### 3 Character Animation and Hierarchies (20 points)

1. Differentiate forward and inverse kinematics.
2. In a hierarchy, when you move the parent, the child moves. True or False? \_\_\_\_\_.
3. In Lightwave, which is a better way to animate a human face: hierarchies or morphing?  
\_\_\_\_\_.
4. Motion recorded from people doing it can easily be changed for entirely new and different characters.  
\_\_\_\_\_.

Given a body whose root segments is A, and where A has two children segments B and C, and C has two children segments D and E, answers these kinds of questions:

5. Which segment is the parent and child of which other segments.
6. How many degrees of freedom does the body have, if it is three-dimensional and all joints can rotate freely?
7. Which segments move when a particular segment moves.

#### Discussion

Describe the process by which the most realistic facial animation is done, including both how the motion is developed and how the face surface properties (color etc.) are found.

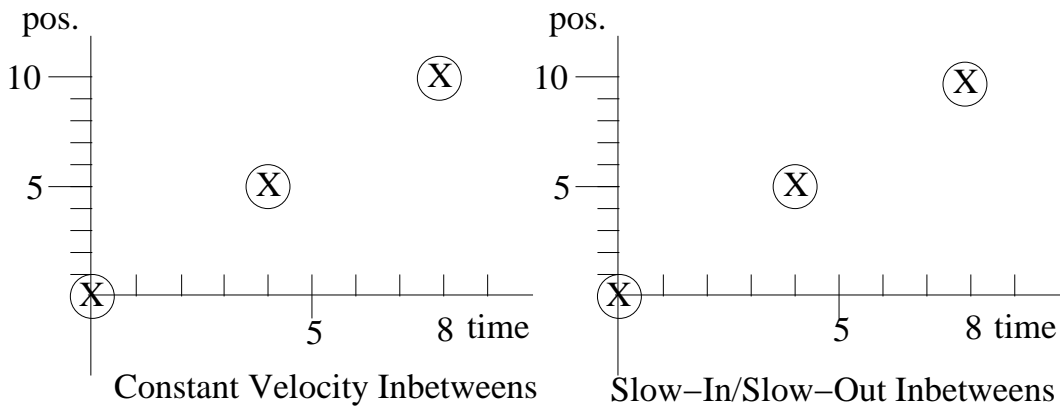
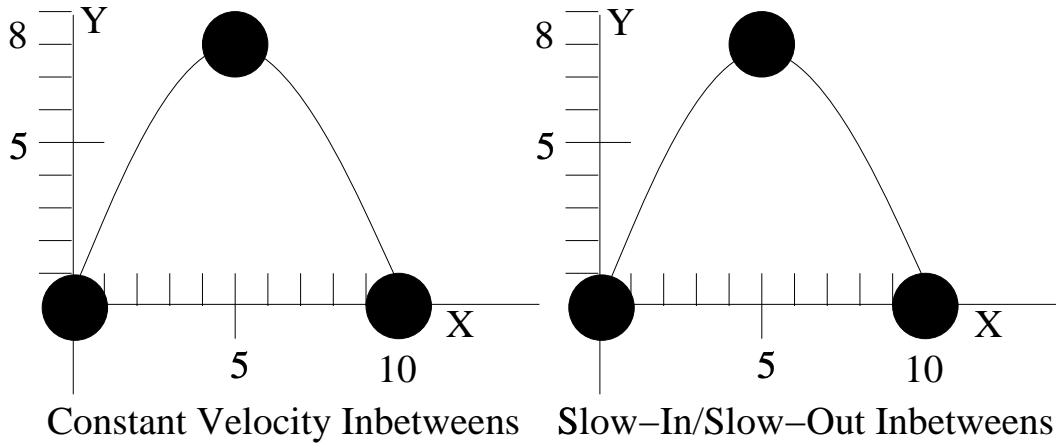
## 4 Advanced Animation Methods (10 points)

1. What method is good for getting very realistic motion of a human dancing?  
-----.
2. What advanced method of animation is good for schools of fish?  
----- animation.
3. Randomly trying various motions and selecting the best is a characteristic of what kind of animation?  
-----.
4. What is Newton's second law and how is it used for animation.
5. Behavioral animation is good at avoiding collisions.

## Motion Graphs (16 points)

Suppose you want to simulate a ball shot from a cannon from the time it exits until it hits the ground. The pictures below show the ball at 3 keyframes that you set at times 0, 4, and 8 seconds.

In the top figure below, fill in the interpolating keyframes so that there is a frame every 1 second, according to the interpolation method given below each image. Draw the interpolated balls as circles. (6 points)



In the lower figure, draw squares labelled with "Y" for the keyframes in Y. (The keyframes in X are already shown.) Also, draw motion curves for the motion in X and Y. Clearly label which curve is X and which is Y. (10 points)

## 5 The Animation Process and Post-Processing (20 points)

1. The normal speed of movie film is \_\_\_\_\_ frames per second.
2. A sound track is usually created after the visual computer animation is done. True or False.  
\_\_\_\_\_.
3. A succession of camera shots that are connected to each other because they develop the same aspect of the action, and follow each other, is a  
\_\_\_\_\_. (Also know about shots and scenes.)
4. Give one of the principles of Disney animation described in class and the text. (Hint: two of them are “secondary action” and “anticipation”.)  
\_\_\_\_\_.
5. Another word for motion blur is \_\_\_\_\_.
6. Know about the sequence of steps in making a commercial animation.
7. Motion caused as a side-effect of another motion (such as hair swinging as a character moves) is called  
\_\_\_\_\_ motion.
8. When a clip gradually disappears and is replaced by a new clip that gradually appears, this is called a  
\_\_\_\_\_. (Hint, also know about other transitions.)
9. A graph showing how many pixels of each intensity are present in a digital image is a  
\_\_\_\_\_.
10. Combining two or more digital images into one image is called \_\_\_\_\_.

## **6 Discussion (20 points)**

Were you happy with the amount of time spent on the different software (Photoshop, Lightwave, Poser, Premiere), or would you rather have spent more or less time on some of them? (10 points)

Given the constraints that this is a large lower-division class, what changes would improve the course? (10 points)

## **Readers/Tutors for Next Year**

If you did well in this class and would like to be a reader and/or tutor for it next winter, please send me email.