

How to Freeze and Unfreeze an Animation and Maintain Time Continuity ¹



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FreezeAnimation.pptx

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At the Top of the Program:

```
const int MS_PER_CYCLE = 10000;      // 10000 milliseconds = 10 seconds
float    TimeFrozen;                 // when animation was frozen
float    TimeUnfrozen;               // when animation was unfrozen
float    TimeElapsed;               // how much time elapsed between freezing and unfreezing
```

In Reset():

```
TimeElapsed = 0.f;
```



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In Keyboard()

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```
case 'f':
case 'F':
    Freeze = ! Freeze;
    if( Freeze )
    {
        glutIdleFunc(NULL);
        TimeFrozen = Time - TimeElapsed;
        if( TimeFrozen < 0. )
            TimeFrozen = TimeFrozen + 1.f;           // wrap-around
    }
    else
    {
        glutIdleFunc(Animate);
        int ms = glutGet(GLUT_ELAPSED_TIME);
        ms %= MS_PER_CYCLE;           // the value of ms is between 0 and MS_PER_CYCLE-1
        Time = (float)ms / (float)MS_PER_CYCLE; // makes the value of Time [0.,1.)
        TimeUnfrozen = Time;
        TimeElapsed = TimeUnfrozen - TimeFrozen;
        if( TimeElapsed < 0. )
            TimeElapsed = TimeElapsed + 1.f;       // wrap-around
    }
    break;
```

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When Drawing

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```
float time = Time - TimeElapsed;
if( time < 0. )
    time = time + 1.f;           // wrap-around
```

When drawing, now use *time* in the same way you used *Time* before. For example:

```
glRotatef( 360.f * time, 0., 1., 0. );
or
float y = Amplitude * sinf( 2.f * F_PI * time );
```

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