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/*
```

This is a program to find the position and velocity of a particle of mass m at an instant associated with force $f(x) = -kx$ which initial is velocity u . This program is created by Mohammad Sazzad Hossain.

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*/
```

```
#include <stdio.h>
```

```
#include <math.h>
```

```
int main()
```

```
{
```

```
float t = 0, v, x = 0, m, k;
```

```
float pi, dt;
```

```
int div, i;
```

```
printf("Enter the mass of particle:");
```

```
scanf("%f",& m);
```

```
printf("Enter the initial velocity: ");
```

```
scanf("%f",& v);
```

```
printf("Enter the constant value of k:");
```

```
scanf("%f",& k);
```

```
printf("Enter the number of division:");
```

```
scanf("%d",& div);
```

```
pi = 4 * atan(1);
```

```
dt = 2 * pi / float (div);
```

```
for(i=0;i<=div;i++)
```

```
{
```

```
    t = dt * i;
```

```
    x = x + v * dt;
```

```
    v = v - (x * k * dt / m);
```

```
printf ( "Time: %f \t Position: %f \t Velocity: %f \n", t, x, v);
```

```
}
```

```
return (0);
```

```
}
```