Runge-Kutta

```
void simulation::UpdateRungeKutta(double h){
	particle *part;

	ClearAccelerations();
	for (forces.MoveFirst(); !forces.AtEnd(); forces.MoveNext()){
		forces.GetCurrent()->CalculateForce();
	}
	DivideByMass();
	HandleFixed();

	int i;
	for (particles.MoveFirst(), i = 0; !particles.AtEnd(); particles.MoveNext(), i++){
		part = particles.GetCurrent();
		p[0][i] = part->position;
		v[0][i] = part->velocity;
		a[0][i] = part->acceleration;
	}

	for (particles.MoveFirst(), i = 0; !particles.AtEnd(); particles.MoveNext(), i++){
		part = particles.GetCurrent();
		part->position += v[0][i] * h/2;
		part->velocity += a[0][i] * h/2;
		p[1][i] = part->position;
		v[1][i] = part->velocity;
		a[1][i] = part->acceleration;
	}

	ClearAccelerations();
	for (forces.MoveFirst(); !forces.AtEnd(); forces.MoveNext())
		forces.GetCurrent()->CalculateForce();
	DivideByMass();
	HandleFixed();

	for (particles.MoveFirst(), i = 0; !particles.AtEnd(); particles.MoveNext(), i++){
		part = particles.GetCurrent();
		part->position += v[1][i] * h/2;
		part->velocity += a[1][i] * h/2;
		p[2][i] = part->position;
		v[2][i] = part->velocity;
		a[2][i] = part->acceleration;
	}

	ClearAccelerations();
	for (forces.MoveFirst(); !forces.AtEnd(); forces.MoveNext())
		forces.GetCurrent()->CalculateForce();
	DivideByMass();
	HandleFixed();

	for (particles.MoveFirst(), i = 0; !particles.AtEnd(); particles.MoveNext(), i++){
		part = particles.GetCurrent();
		part->position += v[2][i] * h;
		part->velocity += a[2][i] * h;
		p[3][i] = part->position;
		v[3][i] = part->velocity;
		a[3][i] = part->acceleration;
	}

	ClearAccelerations();
```

Runge-Kutta

```
	for (forces.MoveFirst(); !forces.AtEnd(); forces.MoveNext())
		forces.GetCurrent()->CalculateForce();
	DivideByMass();
	HandleFixed();


	for (particles.MoveFirst(), i = 0; !particles.AtEnd(); particles.MoveNext(), i++)
	{
		part = particles.GetCurrent();
		part->position = p[0][i] + ( ( v[0][i] + (2 * v[1][i]) + (2*v[2][i]) +
			v[3][i] ) / 6 ) * h;
		part->velocity = v[0][i] + ( ( a[0][i] + (2 * a[1][i]) + (2*a[2][i]) +
			a[3][i] ) / 6 ) * h;
	}

	HandleGround();

}
```