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  Modelling circle using sin and cos

  jseden.dcs.warwick.ac.uk/construit/?load=182

- A construal influenced by the Solar System construal

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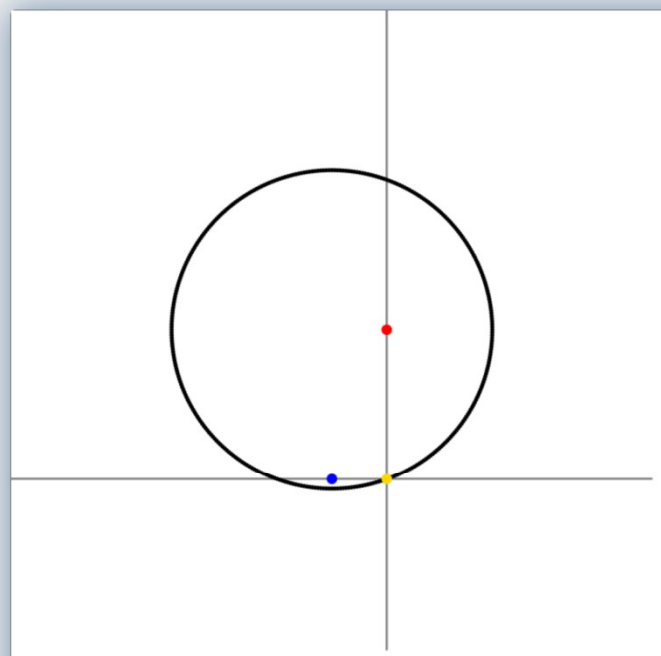
CONSTRUCT! Modelling circle using sin and cos



Modelling ellipses

Circle isn't the only round thing this code can be used to create, as it can be used to create basically any kind of ellipse in any single spot!

That's why I want you to experiment with these variables down below and see how changing them changes the circle on the left. Have Fun!

```
CenterX= 300;    X-cordinate of the circle
CenterY=300;     Y-cordinate of the circle
RadiusX=200;     X-Radius of the circle
RadiusY=150;     Y-Radius of the circle
```

Click the button here to reset the circle

```
CenterX= 300;    X-cordinate of the circle
CenterY=300;     X-cordinate of the circleY-cordinate of the circle
RadiusX=150;     X-cordinate of the circleX-Radius of the circle
RadiusY=150;     Y-Radius of the circle
```

And not only ellipses, this code is a great base on which to create all kinds of curves with just small changes to the X- and Y-value defining functions

```
XValue is CenterX + sin(5*tick/10) * RadiusX;
YValue is CenterY + cos(9*tick/10+216) * RadiusY;
```

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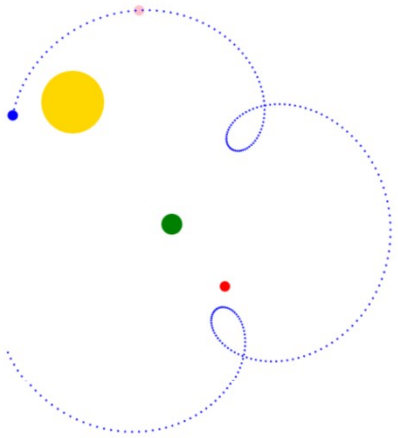


Show the Motion of Mercury

Mercury Trace

Display a memory of where Mercury has been as a trace of small circles

```
mercurysmall is Circle(mercuryX, mercuryY, 1, "blue");
mercurytrace is mercurysmall with tick is (tick-memory)..tick;

memory = 260;
picture is [sun, earth, venus, mercury, mars]// mercurytrace;
```

Make Earth the Centre of the Solar System

Mercurys motion in the sky as observed from Earth is interesting, to see this in our Construal we need to make Earth the centre of the model and have the Sun rotate around us. This shows the mysterious motion of Mercury.

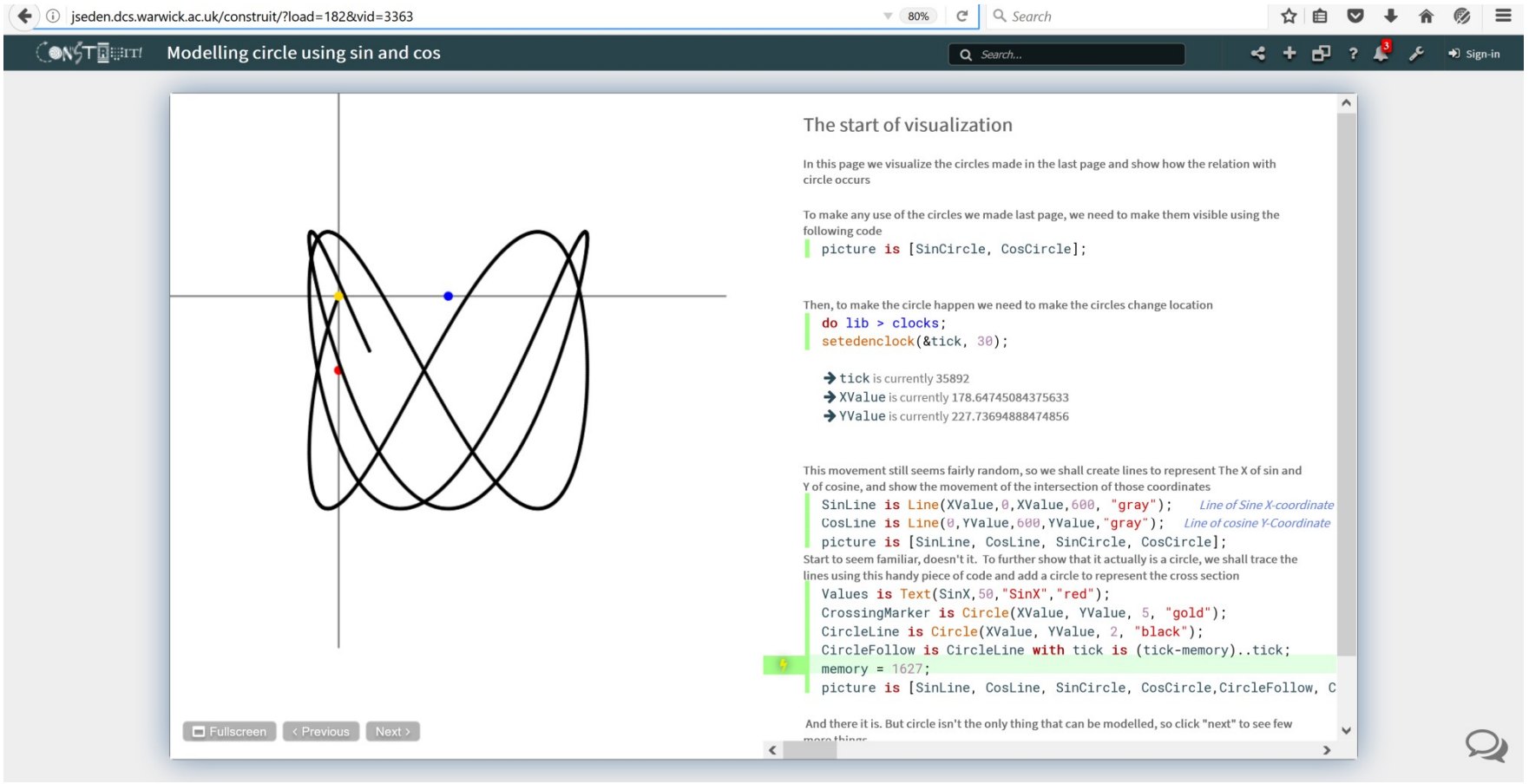
```
earthX is book_width/4;
earthY is book_height/2;
originX is earthX - sin(earthSpeed*tick) * earthDistance;
originY is earthY - cos(earthSpeed*tick) * earthDistance;

earthSpeed = 1;
```

Features in common

- Trigonometric relationships
- Use of clocks
- Locus of moving object
- Use of presentation environment

Possible extensions to

modelling an oscilloscope, Lissajous figures



XValue is CenterX + sin(5*tick/10) * RadiusX;
YValue is CenterY + cos(9*tick/10+216) * RadiusY