# Java ME Compass

## Introduction

This article shows how we can make Java ME compass with built in magnetic compass & GPS. If we select GPS then it will start using the GPS and calculates the direction. If we select built in magnetometer then it gets the angle from built in magnetic compass (if available). The found angle is used to rotate the compass image.

## Device Orientation

Device orientation can be found by built in magnetic compass or by taking GPS location and calculating the direction of movement accordingly. The orientation angle can be used to rotate the compass image and then redrawn on the device screen. Following code shows how to calculate direction of movement using GPS location.

```
private void ProcessLocation(float latitude, float longitude)
 {

float alpha; // result
// calculate vector coordinates
float y = latitude - preLatitude;
float x = longitude - preLongitude;

if (y < 0.00008 && x < 0.00008)
 {
 return;
 }
// hypotenuse
float sqrtResult = 0;
sqrtResult = (float)Math.sqrt(x * x + y * y);
float angle;
angle = (float)Math.sin(Math.abs(x) / sqrtResult);
alpha = (float)(angle * 180 / 3.14); // angle from North in degrees
// correction
if (x > 0)
 {
 // I or IV quadrant
 if (y < 0)
  {
  // IV quadrant
  alpha = 180 - alpha;
  }
 }
else
 {
 // II or III quadrant
 if (y > 0)
  {
  // II quadrant
  alpha = -alpha;
  }
 else
  alpha = alpha - 180;
 }
preLatitude = latitude;
preLongitude = longitude;
```


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```
    AngleFromNorth = (int) alpha;
    angleString = Integer.toString(AngleFromNorth);
     }
```

## Test Application

In the test application, we can select GPS or Magnetic compass to find direction: File:J2meCompassegpsmagnet.zip

## Related compass applications

- Turning phone into magnetic compass using Qt mobility project
- How to turn the N97 into a Magnetic Compass
- Turning phone into magnetic compass by using QML and Qt Mobility


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