Contents

1 Transformations

1.1 wkb2geos

```
GEOSGeom wkb2geos(wkb* geomWKB)
```

The functions gets a pointer to a wkb struct and uses GEOS library to create a GEOSGeometry. In case `geomWKB` is **NULL** `wkb2geos` returns **NULL**.

1.2 geos2wkb

```
wkb* geos2wkb(GEOSGeom geosGeometry)
```

The function gets a pointer to a GEOSGeometry and uses GEOS library to create a wkb struct. In case `geosGeometry` is **NULL**, `malloc` cannot reserve the needed memory or GEOS `GEOSGeomToWKB_buf` function returns **NULL** the function also returns a pointer to a **NULL wkb struct**.

1.3 wkbFROMSTR

```
int wkbFROMSTR(char* geomWKT, int* len, wkb **geomWKB, int srid)
```

The function is used when reading data from disk. It gets a WKT geometry representation `geomWKT` and the `srid` of it and creates the wkb struct `geomWKB`.

In case geomWKT is str_nil or there is some error when creating the GEOSGeometry or the wkb struct from it the function creates a wkb_nil. It returns the number of characters in geomWKT or 0 if an error occurred. *len is set to the size of the size of the geomWKB but I am not sure why this is needed.

1.4 wkbTOSTR

```
int wkbTOSTR(char **geomWKT, int* len, wkb *geomWKB)
```

The functions is used when writting data to disk. It gets a wkb struct geomWKB and creates the WKT representation of it geomWKT. If an error occurs when creating the GEOSGeometry from the geomWKB or when creating the WKT from the GEOSGeometry "nil" is returned as geomWKT. *len has the length of geomWKT including quotes and '\0' character, and is very important for the correct storage of the data.

1.5 wkbFromText

```
str wkbFromText(wkb **geomWKB, str *geomWKT, int* srid, int *tpe)
```

The function uses the wkbFROMSTR to create a geomWKB out of geomWKT. The function is used by the SQL functions

- ST_GeomFromText
- ST_GeometryFromText
- ST_PointFromText
- ST_LineFromText
- ST_PolygonFromText
- ST_MPointFromText
- ST_MLineFromText
- ST_MPolyFromText
- ST_GeomCollFromText

*tpe is used to indicate the geometry type that should be created. Although all SQL functions use the same wkbFromText c function a check is performed whether the geomWKT created a geomWKB of the same type as *tpe.

2 Basic Methods on geometric objects (OGC)

2.1 wkbDimension

```
str wkbDimension(int *dimension, wkb **geomWKB)
```

2.2 wkbGeometryType

```
str wkbGeometryType(char** out, wkb** geomWKB, int* flag)
```

2.3 wkbGetSRID

```
str wkbGetSRID(int *out, wkb **geomWKB)
```

2.4 Envelope

2.5 wkbAsText

```
str wkbAsText(str *txt, wkb **geomWKB)
```

The function uses the `wkbFROMSTR` to create a `geomWKT` from `geomWKB`. The function is used by the SQL function `ST_AsText`.

2.6 AsBinary

2.7 wkbIsEmpty

```
str wkbIsEmpty(bit *out, wkb **geomWKB)
```

2.8 wkbIsSimple

```
str wkbIsSimple(bit *out, wkb **geomWKB)
```

2.9 Is3D

2.10 IsMeasured

2.11 wkbBoundary

```
str wkbBoundary(wkb **boundaryWKB, wkb **geomWKB)
```