Select

count(\*) as cnt

### Baseline

, sum(1) as cnt\_baseline

, count(distinct s.refactor\_repo\_name + s.refactor\_commit + s.file) as cases\_baseline

, count(distinct s.refactor\_commit) as commits\_baseline

, avg(bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months) as avg\_bug\_ratio\_diff\_3\_months\_baseline

, STDDEV\_POP(bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months) as std\_bug\_ratio\_diff\_3\_months\_baseline

, avg( if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0)) as avg\_imporve\_bug\_ratio\_3\_months\_baseline

, avg( if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months -0.1, 1, 0)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_baseline

, STDDEV\_POP(if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0)) as std\_improve\_bug\_ratio\_3\_months\_baseline

, avg(bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months) as avg\_bug\_ratio\_diff\_6\_months\_baseline

, STDDEV\_POP(bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months) as std\_bug\_ratio\_diff\_6\_months\_baseline

, avg( if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0)) as avg\_imporve\_bug\_ratio\_6\_months\_baseline

, STDDEV\_POP(if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0)) as std\_improve\_bug\_ratio\_6\_months\_baseline

, avg(1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months) as avg\_bug\_ratio\_diff\_n3\_months\_baseline

, STDDEV\_POP(1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months) as std\_bug\_ratio\_diff\_n3\_months\_baseline

, avg( if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0)) as avg\_imporve\_bug\_ratio\_n3\_months\_baseline

, STDDEV\_POP( if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0)) as std\_improve\_bug\_ratio\_n3\_months\_baseline

# Coupling

, sum(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,1,0)) as cnt\_coupling\_nt\_1

, count(distinct if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_coupling\_nt\_1

, count(distinct if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 , s.refactor\_commit, null)) as commits\_coupling\_nt\_1

, avg(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_coupling\_nt\_1

, avg( if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_coupling\_nt\_1

, avg( if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months -0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_coupling\_nt\_1

, avg(if(s.rename > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_coupling\_nt\_1

, avg( if(s.rename > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_coupling\_nt\_1

, avg(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_coupling\_nt\_1

, avg( if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_coupling\_nt\_1

, STDDEV\_POP(if(cap\_avg\_non\_test\_file\_per\_commit\_after\_3\_months < cap\_avg\_non\_test\_file\_per\_commit\_before\_3\_months -1 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_coupling\_nt\_1

#### Performance of types

# Influence of rename

, sum(if(s.rename > 0 ,1,0)) as cnt\_rename

, count(distinct if(s.rename > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_rename

, count(distinct if(s.rename > 0 , s.refactor\_commit, null)) as commits\_rename

, avg(if(s.rename > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_rename

, STDDEV\_POP(if(s.rename > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_rename

, avg( if(s.rename > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_rename

, avg( if(s.rename > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_rename

, STDDEV\_POP(if(s.rename > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_rename

, avg(if(s.rename > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_rename

, STDDEV\_POP(if(s.rename > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_rename

, avg( if(s.rename > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_rename

, STDDEV\_POP(if(s.rename > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_rename

, avg(if(s.rename > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_rename

, STDDEV\_POP(if(s.rename > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_rename

, avg( if(s.rename > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_rename

, STDDEV\_POP(if(s.rename > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_rename

# Influence of whitespace\_wars

, sum(if(s.whitespace\_wars > 0 ,1,0)) as cnt\_whitespace\_wars

, count(distinct if(s.whitespace\_wars > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_whitespace\_wars

, count(distinct if(s.whitespace\_wars > 0 , s.refactor\_commit, null)) as commits\_whitespace\_wars

, avg(if(s.whitespace\_wars > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_whitespace\_wars

, avg( if(s.whitespace\_wars > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_whitespace\_wars

, avg( if(s.whitespace\_wars > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_whitespace\_wars

, avg(if(s.whitespace\_wars > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_whitespace\_wars

, avg( if(s.whitespace\_wars > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_whitespace\_wars

, avg(if(s.whitespace\_wars > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_whitespace\_wars

, avg( if(s.whitespace\_wars > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_whitespace\_wars

, STDDEV\_POP(if(s.whitespace\_wars > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_whitespace\_wars

# Influence of style

, sum(if(s.style > 0 ,1,0)) as cnt\_style

, count(distinct if(s.style > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_style

, count(distinct if(s.style > 0 , s.refactor\_commit, null)) as commits\_style

, avg(if(s.style > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_style

, STDDEV\_POP(if(s.style > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_style

, avg( if(s.style > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_style

, avg( if(s.style > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_style

, STDDEV\_POP(if(s.style > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_style

, avg(if(s.style > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_style

, STDDEV\_POP(if(s.style > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_style

, avg( if(s.style > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_style

, STDDEV\_POP(if(s.style > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_style

, avg(if(s.style > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_style

, STDDEV\_POP(if(s.style > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_style

, avg( if(s.style > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_style

, STDDEV\_POP(if(s.style > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_style

# Influence of upgrade

, sum(if(s.upgrade > 0 ,1,0)) as cnt\_upgrade

, count(distinct if(s.upgrade > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_upgrade

, count(distinct if(s.upgrade > 0 , s.refactor\_commit, null)) as commits\_upgrade

, avg(if(s.upgrade > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_upgrade

, avg( if(s.upgrade > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_upgrade

, avg( if(s.upgrade > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_upgrade

, avg(if(s.upgrade > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_upgrade

, avg( if(s.upgrade > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_upgrade

, avg(if(s.upgrade > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_upgrade

, avg( if(s.upgrade > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_upgrade

, STDDEV\_POP(if(s.upgrade > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_upgrade

# Influence of reuse

, sum(if(s.reuse > 0 ,1,0)) as cnt\_reuse

, count(distinct if(s.reuse > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_reuse

, count(distinct if(s.reuse > 0 , s.refactor\_commit, null)) as commits\_reuse

, avg(if(s.reuse > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_reuse

, STDDEV\_POP(if(s.reuse > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_reuse

, avg( if(s.reuse > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_reuse

, avg( if(s.reuse > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_reuse

, STDDEV\_POP(if(s.reuse > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_reuse

, avg(if(s.reuse > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_reuse

, STDDEV\_POP(if(s.reuse > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_reuse

, avg( if(s.reuse > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_reuse

, STDDEV\_POP(if(s.reuse > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_reuse

, avg(if(s.reuse > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_reuse

, STDDEV\_POP(if(s.reuse > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_reuse

, avg( if(s.reuse > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_reuse

, STDDEV\_POP(if(s.reuse > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_reuse

# Influence of simple

, sum(if(s.simple > 0 ,1,0)) as cnt\_simple

, count(distinct if(s.simple > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_simple

, count(distinct if(s.simple > 0 , s.refactor\_commit, null)) as commits\_simple

, avg(if(s.simple > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_simple

, STDDEV\_POP(if(s.simple > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_simple

, avg( if(s.simple > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_simple

, avg( if(s.simple > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_simple

, STDDEV\_POP(if(s.simple > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_simple

, avg(if(s.simple > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_simple

, STDDEV\_POP(if(s.simple > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_simple

, avg( if(s.simple > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_simple

, STDDEV\_POP(if(s.simple > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_simple

, avg(if(s.simple > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_simple

, STDDEV\_POP(if(s.simple > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_simple

, avg( if(s.simple > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_simple

, STDDEV\_POP(if(s.simple > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_simple

# Influence of software\_goals

, sum(if(s.software\_goals > 0 ,1,0)) as cnt\_software\_goals

, count(distinct if(s.software\_goals > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_software\_goals

, count(distinct if(s.software\_goals > 0 , s.refactor\_commit, null)) as commits\_software\_goals

, avg(if(s.software\_goals > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_software\_goals

, avg( if(s.software\_goals > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_software\_goals

, avg( if(s.software\_goals > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_software\_goals

, avg(if(s.software\_goals > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_software\_goals

, avg( if(s.software\_goals > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_software\_goals

, avg(if(s.software\_goals > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_software\_goals

, avg( if(s.software\_goals > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_software\_goals

, STDDEV\_POP(if(s.software\_goals > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_software\_goals

# Influence of reorganize

, sum(if(s.reorganize > 0 ,1,0)) as cnt\_reorganize

, count(distinct if(s.reorganize > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_reorganize

, count(distinct if(s.reorganize > 0 , s.refactor\_commit, null)) as commits\_reorganize

, avg(if(s.reorganize > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_reorganize

, avg( if(s.reorganize > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_reorganize

, avg( if(s.reorganize > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_reorganize

, avg(if(s.reorganize > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_reorganize

, avg( if(s.reorganize > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_reorganize

, avg(if(s.reorganize > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_reorganize

, avg( if(s.reorganize > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_reorganize

, STDDEV\_POP(if(s.reorganize > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_reorganize

# Influence of feedback

, sum(if(s.feedback > 0 ,1,0)) as cnt\_feedback

, count(distinct if(s.feedback > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_feedback

, count(distinct if(s.feedback > 0 , s.refactor\_commit, null)) as commits\_feedback

, avg(if(s.feedback > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_feedback

, STDDEV\_POP(if(s.feedback > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_feedback

, avg( if(s.feedback > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_feedback

, avg( if(s.feedback > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_feedback

, STDDEV\_POP(if(s.feedback > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_feedback

, avg(if(s.feedback > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_feedback

, STDDEV\_POP(if(s.feedback > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_feedback

, avg( if(s.feedback > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_feedback

, STDDEV\_POP(if(s.feedback > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_feedback

, avg(if(s.feedback > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_feedback

, STDDEV\_POP(if(s.feedback > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_feedback

, avg( if(s.feedback > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_feedback

, STDDEV\_POP(if(s.feedback > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_feedback

# Influence of refactor

, sum(if(s.refactor > 0 ,1,0)) as cnt\_refactor

, count(distinct if(s.refactor > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_refactor

, count(distinct if(s.refactor > 0 , s.refactor\_commit, null)) as commits\_refactor

, avg(if(s.refactor > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_refactor

, STDDEV\_POP(if(s.refactor > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_refactor

, avg( if(s.refactor > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_refactor

, avg( if(s.refactor > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_refactor

, STDDEV\_POP(if(s.refactor > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_refactor

, avg(if(s.refactor > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_refactor

, STDDEV\_POP(if(s.refactor > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_refactor

, avg( if(s.refactor > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_refactor

, STDDEV\_POP(if(s.refactor > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_refactor

, avg(if(s.refactor > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_refactor

, STDDEV\_POP(if(s.refactor > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_refactor

, avg( if(s.refactor > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_refactor

, STDDEV\_POP(if(s.refactor > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_refactor

# Influence of unneeded

, sum(if(s.unneeded > 0 ,1,0)) as cnt\_unneeded

, count(distinct if(s.unneeded > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_unneeded

, count(distinct if(s.unneeded > 0 , s.refactor\_commit, null)) as commits\_unneeded

, avg(if(s.unneeded > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_unneeded

, avg( if(s.unneeded > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_unneeded

, avg( if(s.unneeded > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_unneeded

, avg(if(s.unneeded > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_unneeded

, avg( if(s.unneeded > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_unneeded

, avg(if(s.unneeded > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_unneeded

, avg( if(s.unneeded > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_unneeded

, STDDEV\_POP(if(s.unneeded > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_unneeded

# Influence of se\_constructs

, sum(if(s.se\_constructs > 0 ,1,0)) as cnt\_se\_constructs

, count(distinct if(s.se\_constructs > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_se\_constructs

, count(distinct if(s.se\_constructs > 0 , s.refactor\_commit, null)) as commits\_se\_constructs

, avg(if(s.se\_constructs > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_se\_constructs

, avg( if(s.se\_constructs > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_se\_constructs

, avg( if(s.se\_constructs > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_se\_constructs

, avg(if(s.se\_constructs > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_se\_constructs

, avg( if(s.se\_constructs > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_se\_constructs

, avg(if(s.se\_constructs > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_se\_constructs

, avg( if(s.se\_constructs > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_se\_constructs

, STDDEV\_POP(if(s.se\_constructs > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_se\_constructs

# Influence of optimization

, sum(if(s.optimization > 0 ,1,0)) as cnt\_optimization

, count(distinct if(s.optimization > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_optimization

, count(distinct if(s.optimization > 0 , s.refactor\_commit, null)) as commits\_optimization

, avg(if(s.optimization > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_optimization

, STDDEV\_POP(if(s.optimization > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_optimization

, avg( if(s.optimization > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_optimization

, avg( if(s.optimization > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_optimization

, STDDEV\_POP(if(s.optimization > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_optimization

, avg(if(s.optimization > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_optimization

, STDDEV\_POP(if(s.optimization > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_optimization

, avg( if(s.optimization > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_optimization

, STDDEV\_POP(if(s.optimization > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_optimization

, avg(if(s.optimization > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_optimization

, STDDEV\_POP(if(s.optimization > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_optimization

, avg( if(s.optimization > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_optimization

, STDDEV\_POP(if(s.optimization > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_optimization

# Influence of clean

, sum(if(s.clean > 0 ,1,0)) as cnt\_clean

, count(distinct if(s.clean > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_clean

, count(distinct if(s.clean > 0 , s.refactor\_commit, null)) as commits\_clean

, avg(if(s.clean > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_clean

, STDDEV\_POP(if(s.clean > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_clean

, avg( if(s.clean > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_clean

, avg( if(s.clean > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_clean

, STDDEV\_POP(if(s.clean > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_clean

, avg(if(s.clean > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_clean

, STDDEV\_POP(if(s.clean > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_clean

, avg( if(s.clean > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_clean

, STDDEV\_POP(if(s.clean > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_clean

, avg(if(s.clean > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_clean

, STDDEV\_POP(if(s.clean > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_clean

, avg( if(s.clean > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_clean

, STDDEV\_POP(if(s.clean > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_clean

# Influence of rework

, sum(if(s.rework > 0 ,1,0)) as cnt\_rework

, count(distinct if(s.rework > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_rework

, count(distinct if(s.rework > 0 , s.refactor\_commit, null)) as commits\_rework

, avg(if(s.rework > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_rework

, STDDEV\_POP(if(s.rework > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_rework

, avg( if(s.rework > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_rework

, avg( if(s.rework > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_rework

, STDDEV\_POP(if(s.rework > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_rework

, avg(if(s.rework > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_rework

, STDDEV\_POP(if(s.rework > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_rework

, avg( if(s.rework > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_rework

, STDDEV\_POP(if(s.rework > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_rework

, avg(if(s.rework > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_rework

, STDDEV\_POP(if(s.rework > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_rework

, avg( if(s.rework > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_rework

, STDDEV\_POP(if(s.rework > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_rework

# Influence of todo

, sum(if(s.todo > 0 ,1,0)) as cnt\_todo

, count(distinct if(s.todo > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_todo

, count(distinct if(s.todo > 0 , s.refactor\_commit, null)) as commits\_todo

, avg(if(s.todo > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_todo

, STDDEV\_POP(if(s.todo > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_todo

, avg( if(s.todo > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_todo

, avg( if(s.todo > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_todo

, STDDEV\_POP(if(s.todo > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_todo

, avg(if(s.todo > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_todo

, STDDEV\_POP(if(s.todo > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_todo

, avg( if(s.todo > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_todo

, STDDEV\_POP(if(s.todo > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_todo

, avg(if(s.todo > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_todo

, STDDEV\_POP(if(s.todo > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_todo

, avg( if(s.todo > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_todo

, STDDEV\_POP(if(s.todo > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_todo

# Influence of spelling

, sum(if(s.spelling > 0 ,1,0)) as cnt\_spelling

, count(distinct if(s.spelling > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_spelling

, count(distinct if(s.spelling > 0 , s.refactor\_commit, null)) as commits\_spelling

, avg(if(s.spelling > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_spelling

, STDDEV\_POP(if(s.spelling > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_spelling

, avg( if(s.spelling > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_spelling

, avg( if(s.spelling > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_spelling

, STDDEV\_POP(if(s.spelling > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_spelling

, avg(if(s.spelling > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_spelling

, STDDEV\_POP(if(s.spelling > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_spelling

, avg( if(s.spelling > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_spelling

, STDDEV\_POP(if(s.spelling > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_spelling

, avg(if(s.spelling > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_spelling

, STDDEV\_POP(if(s.spelling > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_spelling

, avg( if(s.spelling > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_spelling

, STDDEV\_POP(if(s.spelling > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_spelling

# Influence of improve

, sum(if(s.improve > 0 ,1,0)) as cnt\_improve

, count(distinct if(s.improve > 0 , s.refactor\_repo\_name + s.refactor\_commit + s.file, null)) as cases\_improve

, count(distinct if(s.improve > 0 , s.refactor\_commit, null)) as commits\_improve

, avg(if(s.improve > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_3\_months\_improve

, STDDEV\_POP(if(s.improve > 0 ,bug\_ratio\_after\_3\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_3\_months\_improve

, avg( if(s.improve > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_improve

, avg( if(s.improve > 0 ,if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months - 0.1, 1, 0), null)) as avg\_imporve\_bug\_ratio\_3\_months\_1\_improve

, STDDEV\_POP(if(s.improve > 0 , if (bug\_ratio\_after\_3\_months < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_3\_months\_improve

, avg(if(s.improve > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_6\_months, null)) as avg\_bug\_ratio\_diff\_6\_months\_improve

, STDDEV\_POP(if(s.improve > 0 ,bug\_ratio\_after\_6\_months - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_6\_months\_improve

, avg( if(s.improve > 0 ,if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_6\_months\_improve

, STDDEV\_POP(if(s.improve > 0 , if (bug\_ratio\_after\_6\_months < bug\_ratio\_before\_6\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_6\_months\_improve

, avg(if(s.improve > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as avg\_bug\_ratio\_diff\_n3\_months\_improve

, STDDEV\_POP(if(s.improve > 0 ,1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) - bug\_ratio\_before\_3\_months, null)) as std\_bug\_ratio\_diff\_n3\_months\_improve

, avg( if(s.improve > 0 ,if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as avg\_imporve\_bug\_ratio\_n3\_months\_improve

, STDDEV\_POP(if(s.improve > 0 , if (1.0\*(bug\_hits\_after\_6\_months - bug\_hits\_after\_3\_months)/(commits\_after\_6\_months - commits\_after\_3\_months) < bug\_ratio\_before\_3\_months, 1, 0), null)) as std\_improve\_bug\_ratio\_n3\_months\_improve

From

[citric-trees-187317:repo\_attributes.refactor\_stats\_with\_type] as s

#### Clean conditions

where

(not s.refactor\_file\_test)

and s.major\_source\_extension

and (s.commits\_before\_3\_months > 9)

and (s.commits\_after\_3\_months > 9)

and (s.refactor\_commit\_non\_test\_files =1)

#### Scope conditions

Where

(not s.refactor\_file\_test)

and s.major\_source\_extension

and (s.commits\_before\_3\_months > 4)

and (s.commits\_after\_3\_months > 4)

and (s.refactor\_commit\_non\_test\_files < 6)

#### Scope conditions, with next

Where

(not s.refactor\_file\_test)

and s.major\_source\_extension

and (s.commits\_before\_3\_months > 4)

and (s.commits\_after\_3\_months > 4)

And (s.commits\_after\_6\_months - s.commits\_after\_3\_months) > 4

and (s.refactor\_commit\_non\_test\_files < 6)

#### Clean conditions, with next

where

(not s.refactor\_file\_test)

and s.major\_source\_extension

and (s.commits\_before\_3\_months > 9)

and (s.commits\_after\_3\_months > 9)

and (s.refactor\_commit\_non\_test\_files =1)

And (s.commits\_after\_6\_months - s.commits\_after\_3\_months) > 9

#### Clean conditions, with next, require testing

where

(not s.refactor\_file\_test)

and s.major\_source\_extension

and (s.commits\_before\_3\_months > 9)

and (s.commits\_after\_3\_months > 9)

and (s.refactor\_commit\_non\_test\_files =1)

And s.commits\_after\_6\_months > s.commits\_after\_3\_months

And s.refactor\_file\_num > 1 # in this case, it should be a test