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Format["Core32"] = ["Binary8p3se", "Binary8p4se"]
Format["Core64"] = ["Binary4p1sf", "Binary4p2sf", "Binary8p3se", "Binary8p4se"]
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IEEE754_format["Core32"] = ["binary32"]
  ConvertToIEEE754(fx,  $\phi$ ,  $\rho$ )
  > ConvertToIEEE754(Binary8p3se, binary32,  $\rho$ )
  > ConvertToIEEE754(Binary8p4se, binary32,  $\rho$ )
   $\rho$  in [
    (NearestTiesToEven, SatPropagate),
    (StochasticB(Minimum(Precision(fx), 16)), SatPropagate),
  ]
  * ConvertToIEEE754{fx=Binary8p3se,  $\phi$ =binary32,  $\rho$ =(NearestTiesToEven, SatPropagate)}
  * ConvertToIEEE754{Binary8p3se, binary32, (NearestTiesToEven, SatPropagate)}

  * ConvertToIEEE754(f=Binary8p3se,  $\phi$ =binary32,  $\rho$ =(NearestTiesToEven, SatPropagate))
  * ConvertToIEEE754(f=Binary8p3se,  $\phi$ =binary32,  $\rho$ =(StochasticB(3), SatPropagate))
  * ConvertToIEEE754(f=Binary8p4se,  $\phi$ =binary32,  $\rho$ =(NearestTiesToEven, SatPropagate))
  * ConvertToIEEE754(f=Binary8p4se,  $\phi$ =binary32,  $\rho$ =(StochasticB(4), SatPropagate))

ConvertFromIEEE754(fx,  $\phi$ ,  $\rho$ )
> ConvertFromIEEE754(binary32, Binary8p3se,  $\rho$ )
> ConvertFromIEEE754(binary32, Binary8p4se,  $\rho$ )
 $\rho$  in [
  (NearestTiesToEven, SatPropagate),
  (StochasticB(Minimum(Precision(fx), 16)), SatPropagate),
]
* ConvertFromIEEE754( $\phi$ =binary32, f=Binary8p3se,  $\rho$ =(NearestTiesToEven, SatPropagate))
* ConvertFromIEEE754( $\phi$ =binary32, f=Binary8p3se,  $\rho$ =(StochasticB(3), SatPropagate))
* ConvertFromIEEE754( $\phi$ =binary32, f=Binary8p4se,  $\rho$ =(NearestTiesToEven, SatPropagate))
* ConvertFromIEEE754( $\phi$ =binary32, f=Binary8p3se,  $\rho$ =(StochasticB(4), SatPropagate))
```

```

Constraints["Core32"] = [
  [ Add(fx, fy, fr,  $\rho$ ) = [
    "( fx == fy )",
    "( BitwidthOf(fr) >= BitwidthOf(fx) )",
    "( PrecisionOf(fr) >= PrecisionOf(fx) )"
  ]
],
[ SqrtFast(fx, fr,  $\rho$ ) = [
  "( fx in {Binary8p3se} )",
  "( fr in {Binary8p3se, Binary8p4se} )"
]
]
]

Add(fx, fy, fr,  $\rho$ )
  available formats: [Binary8p3se, Binary8p4se]
  constraints:
    - "( BitwidthOf(fr) >= BitwidthOf(fx) )"
    - fr in {Binary8p3se, Binary8p4se}
    - fx in {Binary8p3se, Binary8p4se}
    - PrecisionOf(fr) >= PrecisionOf(fx)"
    - fr in {Binary8p4se}, fx in {Binary8p3se, Binary8p4se}
    - fr in {Binary8p3se}, fx in {Binary8p3se}
    - fx == fy
  > Add(Binary8p3se, Binary8p3se, Binary8p3se,  $\rho$ )
  > Add(Binary8p3se, Binary8p3se, Binary8p4se,  $\rho$ )
  > Add(Binary8p4se, Binary8p4se, Binary8p4se,  $\rho$ )
  -  $\rho$  in { (ToNearestTiesToEven, OvfInf), (ToNearestTiesToEven, SatFinite) }
  * Add(Binary8p3se, Binary8p3se, Binary8p3se, (ToNearestTiesToEven, OvfInf))
  * Add(Binary8p3se, Binary8p3se, Binary8p4se, (ToNearestTiesToEven, OvfInf))
  * Add(Binary8p4se, Binary8p4se, Binary8p4se, (ToNearestTiesToEven, OvfInf))
  * Add(Binary8p3se, Binary8p3se, Binary8p3se, (ToNearestTiesToEven, SatFinite))
  * Add(Binary8p3se, Binary8p3se, Binary8p4se, (ToNearestTiesToEven, SatFinite))
  * Add(Binary8p4se, Binary8p4se, Binary8p4se, (ToNearestTiesToEven, SatFinite))

```

```

SqrtFast(fx, fr,  $\rho$ )
  available formats: [Binary8p3se, Binary8p4se]
  constraints:
    - fr in {Binary8p3se, Binary8p4se}
    - fx in {Binary8p4se, Binary8p4se}
    - PrecisionOf(fr) >= PrecisionOf(fx)
    > SqrtFast(Binary8p3se, Binary8p3se,  $\rho$ )
    > SqrtFast(Binary8p3se, Binary8p4se,  $\rho$ )
    > SqrtFast(Binary8p4se, Binary8p4se,  $\rho$ )
    -  $\rho$  in { (ToNearestTiesToEven, SatFinite), (TowardZero, SatFinite) }
    * SqrtFast(Binary8p3se, Binary8p3se, (ToNearestTiesToEven, SatFinite))
    * SqrtFast(Binary8p3se, Binary8p4se, (ToNearestTiesToEven, SatFinite))
    * SqrtFast(Binary8p4se, Binary8p4se, (ToNearestTiesToEven, SatFinite))
    * SqrtFast(Binary8p3se, Binary8p3se, (TowardZero, SatFinite))
    * SqrtFast(Binary8p3se, Binary8p4se, (TowardZero, SatFinite))
    * SqrtFast(Binary8p4se, Binary8p4se, (TowardZero, SatFinite))

all  $\rho$ 
  [ (ToNearestTiesToEven, OvfInf), (ToNearestTiesToEven, SatFinite), (TowardZero, SatFinite) ]

```

Signatures for "Core32":

```
<Add(x::fx, y::fy, r::fr, ρ)>
Add(x::Binary8p3se, y::Binary8p3se, r::Binary8p3se, ρ=(ToNearestTiesToEven, OvfInf))
Add(x::Binary8p3se, y::Binary8p3se, r::Binary8p4se, ρ=(ToNearestTiesToEven, OvfInf))
Add(x::Binary8p4se, y::Binary8p4se, r::Binary8p4se, ρ=(ToNearestTiesToEven, OvfInf))
Add(x::Binary8p3se, y::Binary8p3se, r::Binary8p3se, ρ=(ToNearestTiesToEven, SatFinite))
Add(x::Binary8p3se, y::Binary8p3se, r::Binary8p4se, ρ=(ToNearestTiesToEven, SatFinite))
Add(x::Binary8p4se, y::Binary8p4se, r::Binary8p4se, ρ=(ToNearestTiesToEven, SatFinite))

<SqrtFast(x::fx, r::fr, ρ)>
SqrtFast(x::Binary8p3se, r::Binary8p3se, ρ=(ToNearestTiesToEven, SatFinite))
SqrtFast(x::Binary8p3se, r::Binary8p4se, ρ=(ToNearestTiesToEven, SatFinite))
SqrtFast(x::Binary8p4se, r::Binary8p4se, ρ=(ToNearestTiesToEven, SatFinite))
SqrtFast(x::Binary8p3se, r::Binary8p3se, ρ=(TowardZero, SatFinite))
SqrtFast(x::Binary8p3se, r::Binary8p4se, ρ=(TowardZero, SatFinite))
SqrtFast(x::Binary8p4se, r::Binary8p4se, ρ=(TowardZero, SatFinite))

<ConvertToIEEE754(x::f, r, ρ)>
ConvertToIEEE754(x::Binary8p3se, r=binary32, ρ=(NearestTiesToEven, SatPropagate))
ConvertToIEEE754(x::Binary8p3se, r=binary32, ρ=(StochasticB(3), SatPropagate))
ConvertToIEEE754(x::Binary8p4se, r=binary32, ρ=(NearestTiesToEven, SatPropagate))
ConvertToIEEE754(x::Binary8p4se, r=binary32, ρ=(StochasticB(4), SatPropagate))

<ConvertFromIEEE754(x::f754, r, ρ)>
ConvertFromIEEE754(x::binary32, r=Binary8p3se, ρ=(NearestTiesToEven, SatPropagate))
ConvertFromIEEE754(x::binary32, r=Binary8p3se, ρ=(StochasticB(3), SatPropagate))
ConvertFromIEEE754(x::binary32, r=Binary8p4se, ρ=(NearestTiesToEven, SatPropagate))
ConvertFromIEEE754(x::binary32, r=Binary8p4se, ρ=(StochasticB(4), SatPropagate))

<Convert(x::f, r, ρ)>
Convert(x::Binary8p3se, r=Binary8p4se, ρ=(NearestTiesToEven, SatPropagate))
Convert(x::Binary8p4se, r=Binary8p3se, ρ=(NearestTiesToEven, SatPropagate))
Convert(x::Binary8p3se, r=Binary8p4se, ρ=(StochasticB(3), SatPropagate))
Convert(x::Binary8p4se, r=Binary8p3se, ρ=(StochasticB(4), SatPropagate))
```