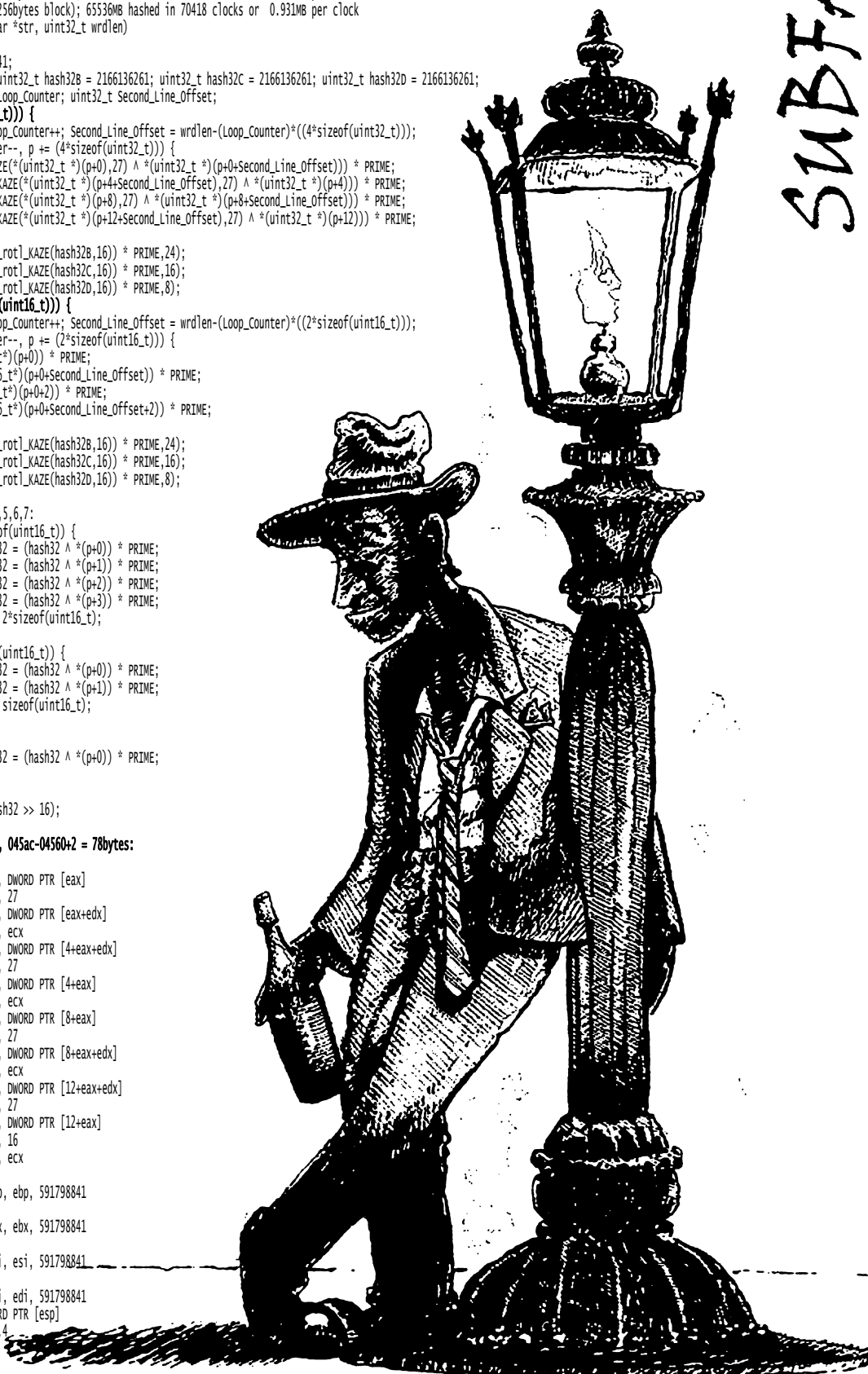


```
// farolito: [Spanish, paper lantern, diminutive of farol], lantern, from faro, lighthouse, lantern, from Latin pharus, from Pharus Pharos.]
// Stride 32 = 4x(4+4), HalfStride = (4*sizeof(uint32_t))
// Stride 8 = 4x2, HalfStride = (2*sizeof(uint16_t))
// Need for that 4th ALU ... needs HASWELL, my expectations are that FNV1A_farolito will shine on HASWELL! On my Core 2 T7500 2200MHz:
// FNV1A_YoshimitsuTRIAD: (256bytes block); 65536MB hashed in 10733 clocks or 6.106MB per clock
// FNV1A_YoshimitsuTRIADi: (256bytes block); 65536MB hashed in 11902 clocks or 5.506MB per clock
// FNV1A_YoshimitsuTRIADiiXMM: (256bytes block); 65536MB hashed in 11918 clocks or 5.499MB per clock
// FNV1A_Yorikke: (256bytes block); 65536MB hashed in 12792 clocks or 5.123MB per clock
// FNV1A_farolito: (256bytes block); 65536MB hashed in 12870 clocks or 5.092MB per clock !!! bitter-a-bit-sweet !!!
// FNV1A_penumbra: (256bytes block); 65536MB hashed in 12901 clocks or 5.080MB per clock
// FNV1A_Yoshimura: (256bytes block); 65536MB hashed in 13307 clocks or 4.925MB per clock
// CRC32_85lice 0x8f6e37a0: (256bytes block); 65536MB hashed in 70418 clocks or 0.931MB per clock
uint32_t FNV1A_farolito(const char *str, uint32_t wrdlen)
{
```

```
const uint32_t PRIME = 591798841;
uint32_t hash32 = 2166136261; uint32_t hash32b = 2166136261; uint32_t hash32c = 2166136261; uint32_t hash32d = 2166136261;
const char *p = str; uint32_t Loop_Counter; uint32_t Second_Line_Offset;
if (wrdlen >= 2*(4*sizeof(uint32_t))) {
    Loop_Counter = (wrdlen>>5); Loop_Counter++; Second_Line_Offset = wrdlen-(Loop_Counter)*((4*sizeof(uint32_t)));
    for(; Loop_Counter; Loop_Counter--, p += (4*sizeof(uint32_t))) {
        hash32 = (hash32 ^ (_rotl_KAZE((uint32_t *) (p+0), 27) ^ (uint32_t *) (p+0+Second_Line_Offset))) * PRIME;
        hash32b = (hash32b ^ (_rotl_KAZE((uint32_t *) (p+4+Second_Line_Offset), 27) ^ (uint32_t *) (p+4))) * PRIME;
        hash32c = (hash32c ^ (_rotl_KAZE((uint32_t *) (p+8), 27) ^ (uint32_t *) (p+8+Second_Line_Offset))) * PRIME;
        hash32d = (hash32d ^ (_rotl_KAZE((uint32_t *) (p+12+Second_Line_Offset), 27) ^ (uint32_t *) (p+12))) * PRIME;
    }
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32b, 16)) * PRIME, 24);
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32c, 16)) * PRIME, 16);
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32d, 16)) * PRIME, 8);
} else if (wrdlen >= 2*(2*sizeof(uint16_t))) {
    Loop_Counter = (wrdlen>>2); Loop_Counter++; Second_Line_Offset = wrdlen-(Loop_Counter)*((2*sizeof(uint16_t)));
    for(; Loop_Counter; Loop_Counter--, p += (2*sizeof(uint16_t))) {
        hash32 = (hash32 ^ *(uint16_t *) (p+0)) * PRIME;
        hash32b = (hash32b ^ *(uint16_t *) (p+0+Second_Line_Offset)) * PRIME;
        hash32c = (hash32c ^ *(uint16_t *) (p+0+2)) * PRIME;
        hash32d = (hash32d ^ *(uint16_t *) (p+0+Second_Line_Offset+2)) * PRIME;
    }
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32b, 16)) * PRIME, 24);
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32c, 16)) * PRIME, 16);
    hash32 = _rotl_KAZE((hash32 ^ _rotl_KAZE(hash32d, 16)) * PRIME, 8);
} else {
    // Cases: 0,1,2,3,4,5,6,7:
    if (wrdlen & 2*(sizeof(uint16_t))) {
        hash32 = (hash32 ^ *(p+0)) * PRIME;
        hash32 = (hash32 ^ *(p+1)) * PRIME;
        hash32 = (hash32 ^ *(p+2)) * PRIME;
        hash32 = (hash32 ^ *(p+3)) * PRIME;
        p += 2*sizeof(uint16_t);
    }
    if (wrdlen & sizeof(uint16_t)) {
        hash32 = (hash32 ^ *(p+0)) * PRIME;
        hash32 = (hash32 ^ *(p+1)) * PRIME;
        p += sizeof(uint16_t);
    }
    if (wrdlen & 1) {
        hash32 = (hash32 ^ *(p+0)) * PRIME;
    }
}
return hash32 ^ (hash32 >> 16);
}
```

FNV1A_farolito's 32[+] main loop, 045ac-04560+2 = 78bytes:

```
.B9.4:
04560 8b 08      mov ecx, DWORD PTR [eax]
04562 c1 c1 1b  rol ecx, 27
04565 33 0c 10   xor ecx, DWORD PTR [eax+edx]
04568 33 e9      xor ebp, ecx
0456a 8b 4c 10 04 mov ecx, DWORD PTR [4+eax+edx]
0456e c1 c1 1b  rol ecx, 27
04571 33 48 04   xor ecx, DWORD PTR [4+eax]
04574 33 d9      xor ebx, ecx
04576 8b 48 08   mov ecx, DWORD PTR [8+eax]
04579 c1 c1 1b  rol ecx, 27
0457c 33 4c 10 08 xor ecx, DWORD PTR [8+eax+edx]
04580 33 f1      xor esi, ecx
04582 8b 4c 10 0c mov ecx, DWORD PTR [12+eax+edx]
04586 c1 c1 1b  rol ecx, 27
04589 33 48 0c  xor ecx, DWORD PTR [12+eax]
0458c 83 c0 10   add eax, 16
0458f 33 f9      xor edi, ecx
04591 69 ed 39 22 46 imul ebp, ebp, 591798841
23
04597 69 db 39 22 46 imul ebx, ebx, 591798841
23
0459d 69 f6 39 22 46 imul esi, esi, 591798841
23
045a3 69 ff 39 22 46 imul edi, edi, 591798841
23
045a9 ff 0c 24   dec DWORD PTR [esp]
045ac 75 b2     jne .B9.4
```



SUBFAST!

Simplificator / Dumbdownificator

On Core 2 T7500 2.2GHz 16KB (L1 cached) block has been hashed at **7,061MB/s** or $(7,061 \cdot 1024 \cdot 1024) / 2,200,000,000 = \underline{\underline{3.3B/c}}$
www.sanmayce.com/Fastest_Hash/index.html#farolito

FNV1A_farolito - a nifty text hasher


```

FNV1A_farolito      : KT_DumpCounter = 0,011,676,942,337; 000,000,001 x MAXcollisionsAtSomeSlots = 000,145; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,011,676,942,337; 000,000,002 x MAXcollisionsAtSomeSlots = 000,146; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,011,811,160,065; 000,000,001 x MAXcollisionsAtSomeSlots = 000,146; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,011,811,160,065; 000,000,002 x MAXcollisionsAtSomeSlots = 000,146; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,011,945,377,793; 000,000,002 x MAXcollisionsAtSomeSlots = 000,147; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,011,945,377,793; 000,000,002 x MAXcollisionsAtSomeSlots = 000,147; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,079,595,521; 000,000,001 x MAXcollisionsAtSomeSlots = 000,148; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,079,595,521; 000,000,002 x MAXcollisionsAtSomeSlots = 000,148; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,213,813,249; 000,000,002 x MAXcollisionsAtSomeSlots = 000,150; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,213,813,249; 000,000,002 x MAXcollisionsAtSomeSlots = 000,150; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,348,030,977; 000,000,003 x MAXcollisionsAtSomeSlots = 000,150; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,348,030,977; 000,000,002 x MAXcollisionsAtSomeSlots = 000,151; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,482,248,705; 000,000,003 x MAXcollisionsAtSomeSlots = 000,151; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,482,248,705; 000,000,002 x MAXcollisionsAtSomeSlots = 000,151; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,616,466,433; 000,000,001 x MAXcollisionsAtSomeSlots = 000,153; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,616,466,433; 000,000,004 x MAXcollisionsAtSomeSlots = 000,151; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,750,684,161; 000,000,003 x MAXcollisionsAtSomeSlots = 000,154; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,750,684,161; 000,000,002 x MAXcollisionsAtSomeSlots = 000,152; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,012,884,901,889; 000,000,002 x MAXcollisionsAtSomeSlots = 000,155; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,012,884,901,889; 000,000,002 x MAXcollisionsAtSomeSlots = 000,153; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,013,019,119,617; 000,000,003 x MAXcollisionsAtSomeSlots = 000,156; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,013,019,119,617; 000,000,002 x MAXcollisionsAtSomeSlots = 000,154; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,013,153,337,345; 000,000,001 x MAXcollisionsAtSomeSlots = 000,157; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,013,153,337,345; 000,000,004 x MAXcollisionsAtSomeSlots = 000,155; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,013,287,555,073; 000,000,001 x MAXcollisionsAtSomeSlots = 000,158; HASHfreesLOTS = 0,000,000,000
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,013,287,555,073; 000,000,002 x MAXcollisionsAtSomeSlots = 000,157; HASHfreesLOTS = 0,000,000,000
FNV1A_farolito      : KT_DumpCounter = 0,013,421,772,801; 000,000,001 x MAXcollisionsAtSomeSlots = 000,159; HASHfreesLOTS = 0,000,000,000 !!! 100:1 !!!
CRC32 0x8F6E37A0, iSCSI: KT_DumpCounter = 0,013,421,772,801; 000,000,006 x MAXcollisionsAtSomeSlots = 000,157; HASHfreesLOTS = 0,000,000,000
...

```

Copyleft
 2013-Jul-21
machineily yours
 Kaze