

```
typedef unsigned int uint;

uint f(uint x[][20], uint n)
{
    uint s = 0;
    for (uint i=0; i<n; i++)
        for (uint j=0; j<20; j++)
            s += x[i][j];
    return s;
}
```

## 32-bitový assembler: -march=athlon -O2

```
f:      pushl %ebp                                cmpl    %ebx, %esi
        xorl  %eax, %eax                       ja      .L7
        movl  %esp, %ebp                       .L3:    popl    %ebx
        pushl %esi                             popl    %esi
        movl  12(%ebp), %esi                    leave
        movl  8(%ebp), %ecx                     ret
        pushl %ebx
        xorl  %ebx, %ebx
        testl %esi, %esi
        je   .L3
.L7:    xorl  %edx, %edx
.L4:    addl  (%ecx,%edx,4), %eax
        incl %edx
        cmpl $20, %edx
        jne  .L4
        incl %ebx
        addl $80, %ecx
```

# 32-bitový assembler: -fomit-frame-pointer

```
f:    pushl %esi                cmpl %ebx, %esi
      xorl %eax, %eax        ja   .L7
      pushl %ebx             .L3: popl %ebx
      movl 16(%esp), %esi    popl %esi
      xorl %ebx, %ebx        ret
      movl 12(%esp), %ecx
      testl %esi, %esi
      je   .L3
.L7:  xorl %edx, %edx
.L4:  addl (%ecx,%edx,4), %eax
      incl %edx
      cmpl $20, %edx
      jne .L4
      incl %ebx
      addl $80, %ecx
```

# 64-bitový assembler: `-march=k8 -m64`

```
f:    testl    %esi, %esi
      je     .L10
      xorl    %eax, %eax
      xorl    %ecx, %ecx
.L5:  xorl    %edx, %edx
.L4:  addl    (%rdi,%rdx), %eax
      addq    $4, %rdx
      cmpq    $80, %rdx
      jne    .L4
      addl    $1, %ecx
      addq    $80, %rdi
      cmpl    %ecx, %esi
      ja     .L5
      ret
.L10: xorl    %eax, %eax
      ret
```

# AMD64, novější GCC: -march=core2 -m64

```
f:    testl    %esi, %esi
      je     .L5
      leal   -1(%rsi), %eax
      leaq  (%rax,%rax,4), %rax
      salq  $4, %rax
      leaq  80(%rdi,%rax), %rcx
      xorl  %eax, %eax
.L3:  xorl   %edx, %edx
.L4:  addl   (%rdi,%rdx), %eax
      addq  $4, %rdx
      cmpq  $80, %rdx
      jne   .L4
      addq  $80, %rdi
      cmpq  %rcx, %rdi
      jne   .L3
      ret
.L5:  xorl  %eax, %eax
      ret
```

# Rozbalená vnitřní smyčka: -funroll-loops

```
.L5: addl    (%rdi), %eax
      addl    4(%rdi), %eax
      movl    $8, %edx
      addl    (%rdi,%rdx), %eax
      addq    $4, %rdx
      addl    (%rdi,%rdx), %eax
      addq    $4, %rdx
.L4:  addl    (%rdi,%rdx), %eax
      addl    4(%rdi,%rdx), %eax
      addl    8(%rdi,%rdx), %eax
      addl    12(%rdi,%rdx), %eax
      addl    16(%rdi,%rdx), %eax
      addl    20(%rdi,%rdx), %eax
      addl    24(%rdi,%rdx), %eax
      addl    28(%rdi,%rdx), %eax
      addq    $32, %rdx
      cmpq    $80, %rdx
      jne    .L4
```