

```

> restart
> #libname:= currentdir(),libname          #uncomment this line
to load Smarandache.mla from your current directory
> with(Smarandache)
                                     [Sm, Smr]
> with(CodeTools):

```

(1)

Comparisons of **Sm** and **Smr** with some common implementations of Smarandache numbers and their reverses in Maple

```

> conc:=(a,b)->a*10^length(b)+b:

```

Common implementations of Sm

```

> Sm1 := proc(n) Sm1(n) := parse(cat(Sm1(n-1),Sm1(0)+n)) end proc:
Sm1(0):=1: #automatically remember the value of computed Sm1(n)'s
> sm := n-> parse(cat($(n+1))):
> Sm2 := n -> foldl(conc,$(n+1)):
> Sm1(99)
12345678910111213141516171819202122232425262728293031323334353637383940414243444\ (2)
54647484950515253545556575859606162636465666768697071727374757677787980818283\
84858687888990919293949596979899100
> sm(99)
12345678910111213141516171819202122232425262728293031323334353637383940414243444\ (3)
54647484950515253545556575859606162636465666768697071727374757677787980818283\
84858687888990919293949596979899100
> Sm2(99)
12345678910111213141516171819202122232425262728293031323334353637383940414243444\ (4)
54647484950515253545556575859606162636465666768697071727374757677787980818283\
84858687888990919293949596979899100
> Sm(99)
12345678910111213141516171819202122232425262728293031323334353637383940414243444\ (5)
54647484950515253545556575859606162636465666768697071727374757677787980818283\
84858687888990919293949596979899100

```

sm is faster than Sm2 and Sm1 for asymptotic terms

```
> t1:=[CPUTime(Sm1(10^5-1))]:t1[1]
Error, (in Sm1) too many levels of recursion
t1_1 (6)
```

```
> t2:=[CPUTime(sm(10^5-1))]:t2[1]
0.094 (7)
```

```
> t3:=[CPUTime(Sm2(10^5-1))]:t3[1]
84.953 (8)
```

```
> t3[2]-t2[2]
0 (9)
```

Sm is faster than sm for asymptotic terms

```
> t4:=[CPUTime(Sm(10^5-1))]:t4[1]
0.032 (10)
```

```
> t5:=[CPUTime(sm(10^8-1))]:t5[1]
265.500 (11)
```

```
> t6:=[CPUTime(Sm(10^8-1))]:t6[1]
46.203 (12)
```

```
> t6[2]-t5[2]
0 (13)
```

Reverse Smarandache numbers

```
> smr := n-> local i; parse(cat(n+1-i$i=0..n)):
> smr(99)
1009998979695949392919089888786858483828180797877767574737271706968676665646362\ (14)
6160595857565554535251504948474645444342414039383736353433323130292827262524\
2322212019181716151413121110987654321
```

```
> Smr(99)
1009998979695949392919089888786858483828180797877767574737271706968676665646362\ (15)
6160595857565554535251504948474645444342414039383736353433323130292827262524\
2322212019181716151413121110987654321
```

```
> t7:=[CPUTime(smr(10^8-1))]:t7[1]
269.859 (16)
```

```
> t8:=[CPUTime(Smr(10^8-1))]:t8[1]
188.953 (17)
```

```
> t8[2]-t7[2]
0 (18)
```