/\* 3S MATRIX SIEVE\*/

 /\*FINDING PRIMES IN THE RANGE (N1;N2)\*/

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 /\* N1>17; N2<2 000 000 000 000 000 000; N2-N1<30000\*/

 unsigned long long int N1=19527221980515000; unsigned long long int N2 =19527221980515200;

 unsigned long long int pr1=floor(N1/6); unsigned long long int pr2=ceil( N2/6);

 int r= 5000; int R2[r]; int rm=pr2-pr1;unsigned long long int S2[r];int r3;int r4;

 int q=5000; int R1[q] ; int qm=rm; unsigned long long int S1[q] ; int q2; int q1;

 for (q=1;q<qm;q++)

 R1[q] =1;

 for (r=1;r<rm;r++)

 R2[r] =1;

 unsigned long longint i; unsigned long long int j;

 unsigned long long int P1;unsigned long long int P2;

unsigned long long int P3;unsigned long long int P4;

unsigned long long int i2= sqrt( pr2/6)+2;

 long long int j1; long long int j2;

 unsigned long long int B;unsigned long long int K;

for ( i=1;i<i2;i++)

{ j2=(pr2+i+1)/( 6\*i+1)+1;j1=(pr1+i+1)/( 6\*i+1);

B=5+5\*( i-1); K=7+6\*( i-1);

if ( i>j1) j1=i;

 for(j=j1; j<j2;j++)

{ P1=B+K\*( j-1);

if(( P1>pr1)&&( P1<pr2))

 { q1=P1-pr1; R1[ q1] =0;

 } }

 j2=(pr2-i+1)/( 6\*i-1)+1;j1=(pr1-i+1)/( 6\*i-1);

 if (j1<1) j1=1;

 B=5+7\*( i-1); K=5+6\*( i-1);

 if ( i>j1-1) j1=i+1;

 for(j=j1; j<j2;j++)

{ P2=B+K\*( j-1);

 if(( P2>pr1)&&( P2<pr2))

 { q2=P2-pr1; R1[ q2] =0;

 } }

 j2=(pr2+i+1)/( 6\*i-1)+1;j1=(pr1+i+1)/( 6\*i-1);

 B=3+5\*( i-1); K=5+6\*( i-1);

 if ( i>j1) j1=i;

 for(j=j1; j<j2;j++)

{ P3=B+K\*( j-1);

 if(( P3>pr1)&&( P3<pr2))

 { r3=P3-pr1; R2[ r3]=0;

 } }

 j2=(pr2-i+1)/( 6\*i+1)+1;j1=(pr1-i+1)/( 6\*i+1);

 B=7+7\*(i-1); K=7+6\*(i-1);

 if ( i>j1)j1=i;

for(j=j1; j<j2;j++)

{ P4=B+K\*( j-1);

 if(( P4>pr1)&&( P4<pr2))

 { r4=P4-pr1; R2[ r4] =0;

 } } }

 cout<<"i2="<<i2<<" ;pr2="<<pr2<<" \n";

 cout<<"P=pr1+q; pr1="<<pr1<<" \n";

 for ( q=1;q<qm;q++) { S1[q] =R1[q]\*((pr1+q)\*6+5); if (S1[q]%5==0) continue;

cout<<"q="<<q<<"; Prime in S1[P]=6\*P+5="<<S1[ q]<<" \n";}

cout<<"P=pr1+r; pr1="<<pr1<<" \n";

 for ( r=1;r<rm;r++) { S2[r] =R2[r]\*((pr1+r)\*6+7);if (S2[r]%5==0) continue;

 cout<<"r="<<r<<"; Prime in S2[P]=6\*P+7="<<S2[ r]<<" \n";}

 cout<<clock();

 system("PAUSE");

 return EXIT\_SUCCESS;

}