

NTT 模数	表达式	原根	NTT 模数	表达式	原根
\$12289\$	$3 \times 2^{12} + 1$	\$11\$	\$13313\$	$13 \times 2^{10} + 1$	\$3\$
\$15361\$	$15 \times 2^{10} + 1$	\$7\$	\$18433\$	$9 \times 2^{11} + 1$	\$5\$
\$19457\$	$19 \times 2^{10} + 1$	\$3\$	\$25601\$	$25 \times 2^{10} + 1$	\$3\$
\$37889\$	$37 \times 2^{10} + 1$	\$3\$	\$39937\$	$39 \times 2^{10} + 1$	\$5\$
\$40961\$	$5 \times 2^{13} + 1$	\$3\$	\$50177\$	$49 \times 2^{10} + 1$	\$3\$
\$58369\$	$57 \times 2^{10} + 1$	\$7\$	\$59393\$	$29 \times 2^{11} + 1$	\$5\$
\$61441\$	$15 \times 2^{12} + 1$	\$17\$	\$64513\$	$63 \times 2^{10} + 1$	\$5\$
\$65537\$	$1 \times 2^{16} + 1$	\$3\$	\$70657\$	$69 \times 2^{10} + 1$	\$7\$
\$76801\$	$75 \times 2^{10} + 1$	\$17\$	\$79873\$	$39 \times 2^{11} + 1$	\$7\$
\$80897\$	$79 \times 2^{10} + 1$	\$3\$	\$83969\$	$41 \times 2^{11} + 1$	\$3\$
\$86017\$	$21 \times 2^{12} + 1$	\$5\$	\$87041\$	$85 \times 2^{10} + 1$	\$3\$
\$95233\$	$93 \times 2^{10} + 1$	\$5\$	\$101377\$	$99 \times 2^{10} + 1$	\$5\$
\$114689\$	$7 \times 2^{14} + 1$	\$3\$	\$119809\$	$117 \times 2^{10} + 1$	\$11\$
\$120833\$	$59 \times 2^{11} + 1$	\$3\$	\$133121\$	$65 \times 2^{11} + 1$	\$3\$
\$147457\$	$9 \times 2^{14} + 1$	\$10\$	\$151553\$	$37 \times 2^{12} + 1$	\$3\$
\$163841\$	$5 \times 2^{15} + 1$	\$3\$	\$176129\$	$43 \times 2^{12} + 1$	\$3\$
\$184321\$	$45 \times 2^{12} + 1$	\$13\$	\$188417\$	$23 \times 2^{13} + 1$	\$3\$
\$202753\$	$99 \times 2^{11} + 1$	\$10\$	\$249857\$	$61 \times 2^{12} + 1$	\$3\$
\$270337\$	$33 \times 2^{13} + 1$	\$10\$	\$286721\$	$35 \times 2^{13} + 1$	\$11\$
\$307201\$	$75 \times 2^{12} + 1$	\$14\$	\$319489\$	$39 \times 2^{13} + 1$	\$23\$
\$331777\$	$81 \times 2^{12} + 1$	\$5\$	\$380929\$	$93 \times 2^{12} + 1$	\$7\$
\$417793\$	$51 \times 2^{13} + 1$	\$5\$	\$430081\$	$105 \times 2^{12} + 1$	\$13\$
\$471041\$	$115 \times 2^{12} + 1$	\$6\$	\$557057\$	$17 \times 2^{15} + 1$	\$3\$
\$638977\$	$39 \times 2^{14} + 1$	\$7\$	\$737281\$	$45 \times 2^{14} + 1$	\$11\$
\$778241\$	$95 \times 2^{13} + 1$	\$6\$	\$786433\$	$3 \times 2^{18} + 1$	\$10\$
\$925697\$	$113 \times 2^{13} + 1$	\$3\$	\$974849\$	$119 \times 2^{13} + 1$	\$3\$
\$1032193\$	$63 \times 2^{14} + 1$	\$11\$	\$1097729\$	$67 \times 2^{14} + 1$	\$3\$
\$1130497\$	$69 \times 2^{14} + 1$	\$5\$	\$1146881\$	$35 \times 2^{15} + 1$	\$3\$
\$1179649\$	$9 \times 2^{17} + 1$	\$19\$	\$1196033\$	$73 \times 2^{14} + 1$	\$3\$
\$1376257\$	$21 \times 2^{16} + 1$	\$5\$	\$1589249\$	$97 \times 2^{14} + 1$	\$3\$
\$1720321\$	$105 \times 2^{14} + 1$	\$17\$	\$1769473\$	$27 \times 2^{16} + 1$	\$5\$
\$1785857\$	$109 \times 2^{14} + 1$	\$3\$	\$2424833\$	$37 \times 2^{16} + 1$	\$3\$
\$2654209\$	$81 \times 2^{15} + 1$	\$11\$	\$2752513\$	$21 \times 2^{17} + 1$	\$20\$
\$3604481\$	$55 \times 2^{16} + 1$	\$3\$	\$3735553\$	$57 \times 2^{16} + 1$	\$5\$
\$5308417\$	$81 \times 2^{16} + 1$	\$5\$	\$5767169\$	$11 \times 2^{19} + 1$	\$3\$
\$6684673\$	$51 \times 2^{17} + 1$	\$5\$	\$6750209\$	$103 \times 2^{16} + 1$	\$3\$
\$6946817\$	$53 \times 2^{17} + 1$	\$3\$	\$7340033\$	$7 \times 2^{20} + 1$	\$3\$
\$7667713\$	$117 \times 2^{16} + 1$	\$10\$	\$8257537\$	$63 \times 2^{17} + 1$	\$5\$
\$8519681\$	$65 \times 2^{17} + 1$	\$3\$	\$8650753\$	$33 \times 2^{18} + 1$	\$10\$
\$10223617\$	$39 \times 2^{18} + 1$	\$5\$	\$11272193\$	$43 \times 2^{18} + 1$	\$3\$
\$12451841\$	$95 \times 2^{17} + 1$	\$3\$	\$13238273\$	$101 \times 2^{17} + 1$	\$3\$
\$13631489\$	$13 \times 2^{20} + 1$	\$15\$	\$14155777\$	$27 \times 2^{19} + 1$	\$7\$
\$14942209\$	$57 \times 2^{18} + 1$	\$11\$	\$16515073\$	$63 \times 2^{18} + 1$	\$5\$
\$21495809\$	$41 \times 2^{19} + 1$	\$3\$	\$22806529\$	$87 \times 2^{18} + 1$	\$13\$
\$23068673\$	$11 \times 2^{21} + 1$	\$3\$	\$26214401\$	$25 \times 2^{20} + 1$	\$3\$
\$27000833\$	$103 \times 2^{18} + 1$	\$3\$	\$28311553\$	$27 \times 2^{20} + 1$	\$5\$
\$29884417\$	$57 \times 2^{19} + 1$	\$5\$	\$36175873\$	$69 \times 2^{19} + 1$	\$7\$
\$37224449\$	$71 \times 2^{19} + 1$	\$3\$	\$40370177\$	$77 \times 2^{19} + 1$	\$3\$
\$69206017\$	$33 \times 2^{21} + 1$	\$5\$	\$70254593\$	$67 \times 2^{20} + 1$	\$3\$
\$81788929\$	$39 \times 2^{21} + 1$	\$7\$	\$101711873\$	$97 \times 2^{20} + 1$	\$3\$
\$104857601\$	$25 \times 2^{22} + 1$	\$3\$	\$111149057\$	$53 \times 2^{21} + 1$	\$3\$
\$113246209\$	$27 \times 2^{22} + 1$	\$7\$	\$120586241\$	$115 \times 2^{20} + 1$	\$6\$

NTT 模数	表达式	原根	NTT 模数	表达式	原根
\$132120577\$	$63 \times 2^{21} + 1$	\$5\$	\$136314881\$	$65 \times 2^{21} + 1$	\$3\$
\$138412033\$	$33 \times 2^{22} + 1$	\$5\$	\$155189249\$	$37 \times 2^{22} + 1$	\$6\$
\$163577857\$	$39 \times 2^{22} + 1$	\$23\$	\$167772161\$	$5 \times 2^{25} + 1$	\$3\$
\$169869313\$	$81 \times 2^{21} + 1$	\$5\$	\$186646529\$	$89 \times 2^{21} + 1$	\$3\$
\$199229441\$	$95 \times 2^{21} + 1$	\$3\$	\$211812353\$	$101 \times 2^{21} + 1$	\$3\$
\$230686721\$	$55 \times 2^{22} + 1$	\$6\$	\$249561089\$	$119 \times 2^{21} + 1$	\$3\$
\$377487361\$	$45 \times 2^{23} + 1$	\$7\$	\$415236097\$	$99 \times 2^{22} + 1$	\$5\$
\$469762049\$	$7 \times 2^{26} + 1$	\$3\$	\$595591169\$	$71 \times 2^{23} + 1$	\$3\$
\$645922817\$	$77 \times 2^{23} + 1$	\$3\$	\$754974721\$	$45 \times 2^{24} + 1$	\$11\$
\$880803841\$	$105 \times 2^{23} + 1$	\$26\$	\$897581057\$	$107 \times 2^{23} + 1$	\$3\$
\$998244353\$	$119 \times 2^{23} + 1$	\$3\$	\$1107296257\$	$33 \times 2^{25} + 1$	\$10\$
\$1224736769\$	$73 \times 2^{24} + 1$	\$3\$	\$1711276033\$	$51 \times 2^{25} + 1$	\$29\$
\$1811939329\$	$27 \times 2^{26} + 1$	\$13\$	\$2013265921\$	$15 \times 2^{27} + 1$	\$31\$
\$2113929217\$	$63 \times 2^{25} + 1$	\$5\$	\$2281701377\$	$17 \times 2^{27} + 1$	\$3\$
\$2483027969\$	$37 \times 2^{26} + 1$	\$3\$	\$2717908993\$	$81 \times 2^{25} + 1$	\$5\$
\$2885681153\$	$43 \times 2^{26} + 1$	\$3\$	\$3221225473\$	$3 \times 2^{30} + 1$	\$5\$
\$3489660929\$	$13 \times 2^{28} + 1$	\$3\$	\$3892314113\$	$29 \times 2^{27} + 1$	\$3\$
\$4630511617\$	$69 \times 2^{26} + 1$	\$5\$	\$5838471169\$	$87 \times 2^{26} + 1$	\$7\$
\$7717519361\$	$115 \times 2^{26} + 1$	\$3\$	\$7918845953\$	$59 \times 2^{27} + 1$	\$3\$
\$8858370049\$	$33 \times 2^{28} + 1$	\$23\$	\$9529458689\$	$71 \times 2^{27} + 1$	\$3\$
\$10871635969\$	$81 \times 2^{27} + 1$	\$7\$	\$12348030977\$	$23 \times 2^{29} + 1$	\$5\$
\$13555990529\$	$101 \times 2^{27} + 1$	\$3\$	\$14092861441\$	$105 \times 2^{27} + 1$	\$19\$
\$14361296897\$	$107 \times 2^{27} + 1$	\$3\$	\$24159191041\$	$45 \times 2^{29} + 1$	\$7\$
\$29796335617\$	$111 \times 2^{28} + 1$	\$5\$	\$34896609281\$	$65 \times 2^{29} + 1$	\$3\$
\$52613349377\$	$49 \times 2^{30} + 1$	\$3\$	\$75161927681\$	$35 \times 2^{31} + 1$	\$3\$
\$77309411329\$	$9 \times 2^{33} + 1$	\$7\$	\$78383153153\$	$73 \times 2^{30} + 1$	\$3\$
\$83751862273\$	$39 \times 2^{31} + 1$	\$11\$	\$91268055041\$	$85 \times 2^{30} + 1$	\$3\$
\$99857989633\$	$93 \times 2^{30} + 1$	\$7\$	\$110595407873\$	$103 \times 2^{30} + 1$	\$3\$
\$125627793409\$	$117 \times 2^{30} + 1$	\$7\$	\$184683593729\$	$43 \times 2^{32} + 1$	\$3\$
\$206158430209\$	$3 \times 2^{36} + 1$	\$22\$	\$212600881153\$	$99 \times 2^{31} + 1$	\$5\$
\$236223201281\$	$55 \times 2^{32} + 1$	\$3\$	\$313532612609\$	$73 \times 2^{32} + 1$	\$3\$
\$347892350977\$	$81 \times 2^{32} + 1$	\$10\$	\$476741369857\$	$111 \times 2^{32} + 1$	\$5\$
\$850403524609\$	$99 \times 2^{33} + 1$	\$13\$	\$901943132161\$	$105 \times 2^{33} + 1$	\$13\$
\$970662608897\$	$113 \times 2^{33} + 1$	\$3\$	\$1288490188801\$	$75 \times 2^{34} + 1$	\$11\$
\$146028880641\$	$85 \times 2^{34} + 1$	\$3\$	\$1700807049217\$	$99 \times 2^{34} + 1$	\$7\$
\$2027224563713\$	$59 \times 2^{35} + 1$	\$3\$	\$2061584302081\$	$15 \times 2^{37} + 1$	\$7\$
\$2748779069441\$	$5 \times 2^{39} + 1$	\$3\$	\$2783138807809\$	$81 \times 2^{35} + 1$	\$11\$
\$4123168604161\$	$15 \times 2^{38} + 1$	\$7\$	\$5566277615617\$	$81 \times 2^{36} + 1$	\$5\$
\$5841155522561\$	$85 \times 2^{36} + 1$	\$6\$	\$6597069766657\$	$3 \times 2^{41} + 1$	\$5\$
\$8040178778113\$	$117 \times 2^{36} + 1$	\$7\$	\$8658654068737\$	$63 \times 2^{37} + 1$	\$5\$
\$12232066859009\$	$89 \times 2^{37} + 1$	\$3\$	\$17317308137473\$	$63 \times 2^{38} + 1$	\$5\$
\$23364622090241\$	$85 \times 2^{38} + 1$	\$3\$	\$28862180229121\$	$105 \times 2^{38} + 1$	\$19\$
\$29686813949953\$	$27 \times 2^{40} + 1$	\$5\$	\$39582418599937\$	$9 \times 2^{42} + 1$	\$5\$
\$44530220924929\$	$81 \times 2^{39} + 1$	\$7\$	\$46179488366593\$	$21 \times 2^{41} + 1$	\$11\$
\$50577534877697\$	$23 \times 2^{41} + 1$	\$3\$	\$55525337202689\$	$101 \times 2^{39} + 1$	\$3\$
\$62672162783233\$	$57 \times 2^{40} + 1$	\$5\$	\$79164837199873\$	$9 \times 2^{43} + 1$	\$5\$
\$96757023244289\$	$11 \times 2^{43} + 1$	\$3\$	\$106652627894273\$	$97 \times 2^{40} + 1$	\$3\$
\$113249697660929\$	$103 \times 2^{40} + 1$	\$3\$	\$171523813933057\$	$39 \times 2^{42} + 1$	\$5\$
\$215504279044097\$	$49 \times 2^{42} + 1$	\$3\$	\$217703302299649\$	$99 \times 2^{41} + 1$	\$7\$
\$255086697644033\$	$29 \times 2^{43} + 1$	\$3\$	\$263882790666241\$	$15 \times 2^{44} + 1$	\$7\$
\$321057395310593\$	$73 \times 2^{42} + 1$	\$3\$	\$409018325532673\$	$93 \times 2^{42} + 1$	\$7\$

NTT 模数	表达式	原根	NTT 模数	表达式	原根
\$435406604599297\$	$99 \times 2^{42} + 1$	\$10\$	\$448600744132609\$	$51 \times 2^{43} + 1$	\$11\$
\$474989023199233\$	$27 \times 2^{44} + 1$	\$5\$	\$505775348776961\$	$115 \times 2^{42} + 1$	\$3\$
\$659706976665601\$	$75 \times 2^{43} + 1$	\$11\$	\$1108307720798209\$	$63 \times 2^{44} + 1$	\$11\$
\$1178676464975873\$	$67 \times 2^{44} + 1$	\$3\$	\$1231453023109121\$	$35 \times 2^{45} + 1$	\$3\$
\$1284229581242369\$	$73 \times 2^{44} + 1$	\$3\$	\$1337006139375617\$	$19 \times 2^{46} + 1$	\$3\$
\$1636073302130689\$	$93 \times 2^{44} + 1$	\$17\$	\$1899956092796929\$	$27 \times 2^{46} + 1$	\$7\$
\$1952732650930177\$	$111 \times 2^{44} + 1$	\$5\$	\$3553621580972033\$	$101 \times 2^{45} + 1$	\$3\$
\$3799912185593857\$	$27 \times 2^{47} + 1$	\$5\$	\$4186940278571009\$	$119 \times 2^{45} + 1$	\$3\$
\$4222124650659841\$	$15 \times 2^{48} + 1$	\$19\$	\$4925812092436481\$	$35 \times 2^{47} + 1$	\$3\$
\$5559130790035457\$	$79 \times 2^{46} + 1$	\$3\$	\$7881299347898369\$	$7 \times 2^{50} + 1$	\$6\$
\$9147936743096321\$	$65 \times 2^{47} + 1$	\$3\$	\$12947848928690177\$	$23 \times 2^{49} + 1$	\$3\$
\$14214486323888129\$	$101 \times 2^{47} + 1$	\$3\$	\$15621861207441409\$	$111 \times 2^{47} + 1$	\$11\$
\$16044073672507393\$	$57 \times 2^{48} + 1$	\$5\$	\$17169973579350017\$	$61 \times 2^{48} + 1$	\$3\$
\$19703248369745921\$	$35 \times 2^{49} + 1$	\$3\$	\$22799473113563137\$	$81 \times 2^{48} + 1$	\$5\$
\$30399297484750849\$	$27 \times 2^{50} + 1$	\$11\$	\$31525197391593473\$	$7 \times 2^{52} + 1$	\$3\$
\$38280596832649217\$	$17 \times 2^{51} + 1$	\$3\$	\$59109745109237761\$	$105 \times 2^{49} + 1$	\$17\$
\$77687093572141057\$	$69 \times 2^{50} + 1$	\$5\$	\$112589990684262401\$	$25 \times 2^{52} + 1$	\$3\$
\$168884986026393601\$	$75 \times 2^{51} + 1$	\$11\$	\$180143985094819841\$	$5 \times 2^{55} + 1$	\$6\$
\$418834765345456129\$	$93 \times 2^{52} + 1$	\$7\$	\$459367161991790593\$	$51 \times 2^{53} + 1$	\$5\$
\$855683929200394241\$	$95 \times 2^{53} + 1$	\$3\$	\$882705526964617217\$	$49 \times 2^{54} + 1$	\$5\$
\$891712726219358209\$	$99 \times 2^{53} + 1$	\$7\$	\$1261007895663738881\$	$35 \times 2^{55} + 1$	\$6\$
\$1945555039024054273\$	$27 \times 2^{56} + 1$	\$5\$	\$2053641430080946177\$	$57 \times 2^{55} + 1$	\$7\$
\$2485986994308513793\$	$69 \times 2^{55} + 1$	\$5\$	\$4179340454199820289\$	$29 \times 2^{57} + 1$	\$3\$
\$6269010681299730433\$	$87 \times 2^{56} + 1$	\$5\$	\$10232178353385766913\$	$71 \times 2^{57} + 1$	\$3\$
\$10808639105689190401\$	$75 \times 2^{57} + 1$	\$7\$	\$13690942867206307841\$	$95 \times 2^{57} + 1$	\$3\$
\$15564440312192434177\$	$27 \times 2^{59} + 1$	\$5\$	\$28534807239019462657\$	$99 \times 2^{58} + 1$	\$5\$
\$29687728743626309633\$	$103 \times 2^{58} + 1$	\$3\$	\$31417111000536580097\$	$109 \times 2^{58} + 1$	\$3\$
\$35740566642812256257\$	$31 \times 2^{60} + 1$	\$3\$	\$40928713413543067649\$	$71 \times 2^{59} + 1$	\$3\$
\$51881467707308113921\$	$45 \times 2^{60} + 1$	\$11\$	\$72634054790231359489\$	$63 \times 2^{60} + 1$	\$34\$
\$84163269836299829249\$	$73 \times 2^{60} + 1$	\$3\$	\$86469112845513523201\$	$75 \times 2^{60} + 1$	\$14\$
\$122209679488325779457\$	$53 \times 2^{61} + 1$	\$3\$	\$205220027820018761729\$	$89 \times 2^{61} + 1$	\$3\$
\$219055085875300925441\$	$95 \times 2^{61} + 1$	\$3\$	\$242113515967437864961\$	$105 \times 2^{61} + 1$	\$11\$
\$484227031934875729921\$	$105 \times 2^{62} + 1$	\$17\$	\$502673776008585281537\$	$109 \times 2^{62} + 1$	\$3\$

生成代码：

```
import sympy.ntheory as nth
import random

if __name__ == '__main__':
    output = list()
    for mult in range(1, 120, 2):
        for exp in range(10, 63):
            num = mult << exp | 1
            if nth.isprime(num):
                output.append((num, mult, exp,
nth.residue_ntheory.primitive_root(num)))
    output.sort()
    print(len(output))
    print('^          NTT 模数      ^ 表达式 ^      原根          ^          NTT 模数
```

```
^ 表达式 ^ 原根 ^')
for i in range(0, len(output), 2):
    num, mult, exp, pr_root = output[i]
    string = f'|  ${num}$  |  ${mult}\\times{2}^{{{exp}}}}+1$  |
    ${pr_root}$  '
    if i + 1 < len(output):
        num, mult, exp, pr_root = output[i + 1]
        string += f'|  ${num}$  |  ${mult}\\times{2}^{{{exp}}}}+1$  |
    ${pr_root}$  '
    string += '|'
    print(string)
```

From:
<https://wiki.cvbbacm.com/> - CVBB ACM Team

Permanent link:
<https://wiki.cvbbacm.com/doku.php?id=2020-2021:teams:intrepidword:zhongzihao:ntt>

Last update: **2022/05/02 16:48**