

Forth in Russia: present state and standardization efforts

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Abstract

The development and usage of FORTH in Russia have passed several steps. Now we have some free implementations, experimental or stable, and packages, including educational and successful commercial ones, all of them based on various FORTH standards and extending them to cope with the programmers' and users' requests.

This diversity and incompleteness of existing FORTH standards, including the last (though highly progressive) ANS FORTH, led to an attempt to translate, clarify and enrich it. The corresponding project was organized in the Net and is carried on during the last several years, though not too actively. Its directions and current results are discussed in the paper.

1 The FORTHS, used in Russia

FORTH is used in Russia for many years, for multiple applications, in different versions based on various standards [1]. It is used now, and it is well known, at least much spoken about, in programming spheres; but its usage seems to shorten in the last years.

Main directions are the following:

built-in and control applications: probably the most traditional—initial sphere of FORTH usage;

educational implementations: FORTH is good for education (though it is not doubtless if we are capable of teaching our students in FORTH);

academic packages: usually we study *meta*-features, try to extend the existing area of FORTH life to other areas;

commercial programming: not so many programmers are known to be successful implementors of commercial FORTH systems; but they exist in internet and accounting areas, possibly others.

The standards used in FORTH implementations are:

pre-, FIG- and 79-FORTHS: ancient FORTHS are still in use somewhere, but their owners usually do not communicate with other people, so no need is to count them in;

forth-83: due to historical reasons (boom of FORTH activity in Russia is in mid-80ies, beginning of 90ies), information separateness from the West (poor email and expensive, restricted and slow internet access in Russia) FORTH-93 is used actively; the best implementation and the book used so far in education is Beta-FORTH by S. N. Baranoff [1]; FORTH-83 was used for many years in National Summer Programming Schools in Novosibirsk;

ANS FORTH: many up-to-date implementations use it; without any doubts it is the only correct way to write contemporary FORTH programs and systems;

own non-standard FORTHS: they are like ancient ones—you cannot speak to their users, for even file I/O is nonstandard and no program that has it can be used on more than one system (or even one computer).

The main Russian implementations are described in table 1. Also, there are works by M.Maksimov (PAUK, based on WIN32FORTH and SP-FORTH), I.Tarasov (PM-FORTH), possibly others.

One can easily see that majority of FORTH implementations are for MS DOS or MS Windows; that reflects real situation with computers in Russia. Nevertheless, there are first successful attempts to use FORTH with Linux, Windows CE (dsFORTH for Windows CE (MIPS) by A.Cherezov (Kalinograd), free).

The most (world-)widely known are commercial packages for SP-FORTH, written by its author A.Cherezov (e-mail-, ftp-, www- and other inter- and intra-net-server **E-Serv** and others).

The most used Western FORTH implementation is WIN32FORTH (for MS Windows, 3.3, 1996 and later; T.Zimmer, A.McKewan; Win32 application with *meta*-compiler (needs external C++), rich documentation etc);

Table 1: Russian FORTHS

| name, OS, version, year | author, city | description |
|--|-----------------------------|--|
| Beta-FORTH, MS DOS, v.3.2, 1993 | S.N.Baranoff, St.Petersburg | FORTH-83, 64K model, <i>meta</i> -compiler, scientific and educational, free, book [1] |
| B-FORTH, MS DOS, or UKNC, v.4, 1998 | K.G.Burkov, St.Petersburg | FORTH-83, non-standard extensions and inner interpreter structure, educational, own documentation, free; see http://myke.webjump.com/...forth/ |
| SP-FORTH, MS DOS, v.2.5, 1994 | A.Cherezov, Kaliningrad | ANS FORTH, <i>meta</i> -compiler, commercial applications, free, poor own documentation; see: http://www.enet.ru/ |
| SP-FORTH, MS Windows95/98/NT/ 2000, v.3, 1998 | A.Cherezov, Kaliningrad | ANS FORTH, <i>meta</i> -compiler, commercial applications (<i>E-Serv</i>), poor own documentation, free; see: http://www.enet.ru/ |
| Smal32FORTH, MS DOS with extender, MS Windows, v.1997.11, 1997 | A.Larionov, Moscow | FORTH-83 with non-standard extensions, on-line help; free; see: http://ht.psy.msu.ru/smal32/ |
| GPFORTH, MS DOS with extender, v.94.7, 1994 | A.Larionov, Moscow | FORTH-83 with non-standard extensions, on-line help; free; see: http://ht.psy.msu.ru/smal32/ |
| Small/32FORTH, Linux, 1999 | A.Larionov, Moscow; | Linux 32-bit port of MS DOS FORTH implementation; FORTH-83, non-standard; free; see: http://ht.psy.msu.ru/smal32/ |
| XFORTH, Linux, v.1.3, 1998 | A.Darkman | free FORTH for Linux (RedHat) |

although there are others used (e.g. gFORTH (for various platforms, v0.4, 1998; B.Paysan, A.Ertl, J.Wilke, et al., ANS FORTH, free); hFORTH (MS DOS, for small embedded systems, v0.0.9, 1997, W.Koh); kFORTH (Linux & MS Windows, CCRE & K.Myneni & GNU, 1999); ColorFORTH (C.Moore); PFE (D.Zoller, v.0.9.14); PygmyFORTH (F.Sergeant, v.1.5)); and, maybe, some others. ANS FORTHS are preferred now.

FORTH is here discussed and worked with in:

- usenet group `comp.lang.forth`,
its Russian analog `relcom.com.lang.forth`
(also known as `fido7.comp.lang.forth`),
available in FIDOnet as echo (newsgroup) `su.forth`
(moderated by Fyodor Ustinov (`2:5020/79@FidoNet`,
`ufm@prospect.com.ru`));
- the fileecho in FIDOnet ADEVFORTH; everything passed through it is
stored at `ftp://ftp.prospect.com.ru/forth/`;
- FIDOnet FAQ-server is available at `2:450/77.47@FidoNet`
(To: `ForthServer`, by Aleksey Filutich);
- the main page for Russian FORTHERs is at `http://www.forth.org.ru/`;
- and special questions, discussed below, are viewed from
`http://myke.webjump.com/forth/`.

There are too few publications on FORTH here in the last years; besides the well-known book [1], the new one [2] appeared, but is not widely available, because it was published in Novosibirsk in too small number of copies.

Several books are available over the nets in scanned form; though it is not obvious if such distributions are legal, they help the FORTHERs, both beginners and experienced ones, so we should not try to ban them.

2 FORTH standardization in Russia

It was already mentioned that we use different FORTHS, based on various standards. Several years ago (in 1994) the ANS FORTH standard was adopted and spread in Russia (in the electronic and paper form of the last draft: we cannot imagine that the standard itself may be purchased from here: its cost is equal to an average 1-year salary).

After several successful attempts of implementation of the new standard it became clear that:

- we need a Russian translation of at least its most important parts;
- even this, the biggest standard so far, does not fill all the necessary areas.

Thus the initiative appeared in 1996-1997:

- to translate the necessary parts;
- to improve the standard at least locally, by clarifying and adding wordsets; to implement them and, if they prove to be useful, to suggest them to ANS or ISO committees.

M.Kolodin was elected as coordinator of this work; M.Gassanenko (Ph.D) became his assistant (both—St.Petersburg, Russia).

For some time the work was rather active: we distributed the jobs between the participants, created the corresponding webpage (now it is available at myke.webjump.com/forth/); and achieved some results in translation (see the page for archives with complete texts).

At the same time the work over wordsets began; urgent clarifications seemed to be done with `FILE-ACCESS`, `LOCALS`, `MEMORY-ALLOCATION`, `SEARCH-ORDER`, `STRING` wordsets, small additions or corrections could be done to all the rest. We noticed that it was not easy to work with directories, peripheral devices, parallel processes, OS access etc. Some suggestions are available on the webpage and are discussed in the `FIDOnet` newsgroup `su.forth` even by now.

Unfortunately, no decisions were made so far—we are still in the long and boring period of discussion. Recently new participants' energy appeared in the Net, and we returned to more active actions. So you are welcome to see the process and its result in the nearest future on the same webpage.

References

- [1] Baranoff S. N., Nozdrunov N. R. The `FORTH` language and its implementations. — Leningrad: Mashinostroyeniye, 1988. — 157 p.
- [2] Baranoff S. N., Kolodin M. Y. The `FORTH` phenomenon. // System Informatics, #4. // Novosibirsk: VO Nauka, Sibirskaya Publishing Company, 1995. — Pp. 193–271.