```
/*********************************************************************
 *  copyleft(c)
 *********************************************************************
 *  module: bkc
 *  file name: bkc.h
 *  description: the main interface of the bkc library.
 *********************************************************************
 *  version:
 *    v1.1.7
 *********************************************************************
 *  overlook:
 *
 *  x1. bkc is short for blade kit of c language.
 *
 *  x2. bkc is a light-weighted platform which provides the most usefull
 *      and commonly used functionalites in the development of c language.
 *      bkc is also the platform on which the excellent ideas can be
 *      easily tried and realized.
 *
 *      bkc lives for two aims:
 *      a. be helpfull with the learning and practising c language for
 *         the buddies who need to use c language.
 *
 *      b. be useful for the development of all
 *         imaginable projects in c language, especially for the
 *         embeded ones.
 *
 *  x3. bkc believes that life can be better if the helpfull things
 *      are spreading fiercely and freely.
 *
 *********************************************************************
 *  license:
 *
 *  bkc conforms to "EMPTY LICENSE".
 *
 *  this means that:
 *  x1. bkc will always be source opened, and can always
 *      be gotten freely via network or other methods when we needed.
 *      'freely' includes without any payment.
 *
 *  x2. every buddy who gets bkc can use it freely at once.
 *      'freely' includes without any payment and in any methods.
```

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*
*  x3. commercial use of bkc is welcomed and recommended.
*
*      PLEASE NOTE!
*      there is always a simple rule:
*      the commercial group must pay the real-value of the bkc
*      to the participants who participates in the commercial group.
*
*      the participants includes employees and employers in the
*      commercial group.
*
*      other detailed information such as the real-value calculation and
*      corresponding payment methods is detailed in "EMPTY LICENSE"
*      specification.
*
*  "EMPTY LICENSE" specification can be found in the
*  path of bkc/auxiliary/sandbox/bkc_multicube/EMPTY_LICENSE.txt
*
*
*  the following are the declaration recommended in "EMPTY_LICENSE".
*
*  Copyright Declaration
*
*  This work is an open resource, and it is distributed in the hope that
*  it will be helpful and useful.
*
*  You can use it freely to your needs under the EMPTY LICENSE.
*  There is also a clear warranty. Please see the EMPTY LICENSE
*  for more details.
*
*  You should have received a copy of the EMPTY LICENSE along with this
*  work. If not, see <http://groups.google.de/group/pub-res-fd>.
*
********************************************************************************
*  trunk docs:
*
*  x1. preface doc:
*    auxiliary/trunk/bkc_trunkdoc_preface.pdf
*
*    this is the big gate of bkc, everything about bkc
*    can be found from here.
*    The modifiable version of this doc is
```

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*       bkc/auxiliary/sandbox/bkc_multicube/bkc_trunkdoc_preface.odt
*
*   x2. designment doc:
*      auxiliary/trunk/bkc_trunkdoc_designment.pdf
*      this is the designment of bkc.
*
*      The modifiable version of this doc is
*      bkc/auxiliary/sandbox/bkc_multicube/bkc_trunkdoc_designment.odg
*
*   x3. modification history doc:
*      auxiliary/trunk/bkc_trunkdoc_modhistory.txt
*      this is a history of important modifications for bkc
*
*   x4. selfmending doc:
*      bkc_trunkdoc_selfmending.txt
*      more aims and prospects of bkc are recorded here.
*
*****************************************************************************
*   current module list:
*
*   all modules available in bkc are as follows:
*
*   bkc_dlist
*   bkc_libc
*   bkc_pthread
*   bkc_queue
*   bkc_string
*   bkc_stack
*   bkc_regex
*   bkc_pasync
*   bkc_time
*   bkc_timer
*   bkc_socket
*   bkc_crc
*   bkc_store
*
*   for detailed information, such as functionality, status and maturity
*   of each module can refer to the
*   bkc/auxiliary/sandbox/bkc_multicube/bkc_modules_info.txt
*****************************************************************************
*   how to build and use bkc:
*
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*   platform dependency:
*
*     currently bkc has been built on ubuntu 9.04(linux os)
*     toolchains requirement:
*       c99 or c89 compiler such as gcc
*       make program such as gnu make
*       shell program such as bash
*
*   for detailed information, can refer to the
*   bkc/auxiliary/sandbox/bkc_multicube/bkc_building_and_using.txt
*******************************************************************************
*   how to add a module in bkc:
*
*   add a module is simple in bkc now with the help of gdg_creat_mod.sh
*   script.
*
*   for detailed information, can refer to the
*   bkc/auxiliary/sandbox/bkc_multicube/bkc_adding_new_mod.txt
*******************************************************************************
*   usefull coding helper in bkc:
*
*   the file named bkc_<modulename>_spf.h in each module has
*   supplied try-throw and erring and warning macros for developing
*   of each module,
*   i.e. bkc_dlist_spf.h.
*   there is also a small memory watcher in bkc_<modulename>_spf.h,
*   which can be used to safeguard the memory used in this module
*
*******************************************************************************
*   communication and maintenance info:
*
*   the station for bkc is <http://sourceforge.net/>
*     everything include this gate doc can be found there.
*
*   for getting support and reporting bugs
*     currently can just mail to bkc-maintaining mailbox
*     buglist information now can be found and traced in the bug tracker.
*
*   for suggestion
*     any suggestions about the growth of bkc is very welcomed.
*     if you need some functionality that you have no time
*     to complete or just a good idea or a wonderfull code episode,
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 *    you are welcomed to mail to the bkc-maintaining mailbox
 *
 *  for joining in and contributing:
 *    any code segment and ideas in connection with bkc are welcomed.
 *
 *  bkc-maintaining mailbox:
 *    tancng@gmail.com
 ***********************************************************************
 *  small tips:
 *
 *  every one is sincerely welcomed to join in bkc, and this is
 *  a long-term act of passing on hope.
 ***********************************************************************
 *  authors:
 *  pgr_id: sizhe(tancng@gmail.com)
 *
 ***********************************************************************
 *  permanent acknowledgement:
 *
 *  from pgr_id:sizhe to this buddies in those memorable days.
 *  detailed list is carefully positioned in
 *  bkc/auxiliary/sandbox/bkc_multicube/bkc_perack_pgrid_sizhe.txt
 ***********************************************************************
 *  log:
 *
 *  milestones are also recorded and detailed in
 *  bkc/auxiliary/sandbox/bkc_multicube/bkc_trunkdoc_modhistory.txt
 *
 *  developing logs scripted by the buddies in bkc can be found in
 *  bkc/auxiliary/sandbox/bkc_devdaily/<buddy_id_name>.
 *
 *  >>>
 *  version:
 *      v1.0.0
 *  time:
 *      Thursday, April 16, 2009 (090416) at 12:45:07 AM UTC/GMT +8 hours
 *  location:
 *      ChongQing, China on Earth
 *      latitude: 29.3 North, longtitude: 106.35 East
 *      international country code: + 86 (China)
 *      area code: 23
 *  weather:
```

```
*       clear, mild
*       temperature: 70 F (comfort level is 70 F)
*       wind: 3 mph from 190 south by west
*
*   pgr_id: sizhe(email:tancng#gmail.com)
*
*   description: created, add the bkc_dlist module
*
*   >>>
*   version:
*       v1.0.0
*   time:
*       Monday, May 4, 2009 (090504) at 1:10:27 AM UTC/GMT +8 hours
*   location:
*       Beijing, China on Earth
*       latitude: 39.55 North, longtitude: 116.23 East
*       international country code: + 86 (China)
*       area code: 10
*   weather:
*       clear, mild
*       temperature: 63 F (comfort level is 63 F)
*       wind: 3 mph from 120 southeast by east
*
*   pgr_id: sizhe(email:tancng#gmail.com)
*
*   description: updating
*
*   >>>
*   version:
*       v1.0.1
*   time:
*       Monday, May 18, 2009 at 12:35:01 AM UTC/GMT +8 hours
*   location:
*       Beijing, China on Earth
*       latitude: 39.55 North, longtitude: 116.23 East
*       international country code: + 86 (China)
*       area code: 10
*   weather:
*       clear, mild
*       temperature: 82 F (comfort level is 81 F)
*       wind: 1 mph from 0 north
*
```

```
*   pgr_id: sizhe(email:tancng#gmail.com)
*
*   description: created, add the bkc_string module
*
*   >>>
*   version:
*       v1.1.7
*   time:
*       Saturday, 27 February 2010, 16:54:57
*       Monday, May 18, 2009 at 12:35:01 PM UTC/GMT +8 hours
*   location:
*       Beijing, China on Earth
*       latitude: 39.55 North, longtitude: 116.23 East
*       international country code: + 86 (China)
*       area code: 10
*   weather:
*       ice fog, chilly
*       temperature: 0 C (comfort level -3 C)
*       wind: 9 km/h from 140 southeast
*
*   pgr_id: sizhe(email:tancng#gmail.com)
*
*   description:
*       update building architecture and all the makefiles in
*       subsidiary modules in bkc.
****************************************************************************/
```