| Iteration | Purpose | Defined | Due | Delivered | Version | Notes |
|:---:|---|---|---|---|:---:|---|
| 1 | Initial with basic infrastructure | 19/02/2010 | 12/03/2010 | 12/03/2010 | 1.00 | |
| 2 | File I/O and data structures | 12/03/2010 | 01/04/2010 | 06/04/2010 | 1.01 | |
| 3 | AYB Initialisation | 08/04/2010 | 26/04/2010 | 27/04/2010 | 1.02 | |

| Index | Priority | Task | Planned | Actual | Notes |
|---|---|---|---|---|---|
| 1 | | Initial system: Make; Run | 1 | 1 | |
| 2 | | Program Version | 1 | 1 | |
| 3 | | Program arguments: Read and store: Infrastructure | 1 | 1 | |
| 4 | | Program Log: Infrastructure | 1 | 1 | |
| 5 | | Signal Handler | 1 | 1 | |
| 6 | | File I/O: Locate, open/create, read/write, close | 2 | 2 | Requires args input (i), output (o); |
| 7 | | Data Structures: Tile, Cluster, Matrix | 2 | 2 | |
| 8 | | Intensities Input: Locate, read, store, tidy up | 2 | 2 | |
| 9 | | Matrix Input: Locate, read, store, tidy up; Read M, N, P | 2 | | Requires args M (M), N (N), P (P) |
| 10 | | Processed Intensities: Calculate and store, tidy up | 3 | | |
| 11 | | Initial Sequence: By maximum intensity | 3 | | |
| 12 | | Sequence output: Create file, write data, close | 3 | | |
| 13 | | Replace message macros with vfprintf | 2 | 2 | |
| 14 | | Expand message severity list to include debug | 2 | 2 | |
| 15 | | Configure Doxygen; add comments to new HM files | 2 | 2 | |
| 16 | | Matrix: Add read_methods for multiple styles | 3 | | 1) Intensities 2) As rows of columns. Move matrix read from cluster. |
| 17 | | Initial Lambda: Ignore weights | 3 | | |

Intensities read for analysis by block                                                      ???

AYB struct: Make bases and quals a cluster list.                                List of what? still an array or a 1-d matrix?

- Utility: Reimplement xfree null return                                          Use ** or return, could apply to all free_* functions

- XIO: Check and amend file structure handling; nulls etc.; null return          Make interface as close to normal file handle as
  on close                                                                        possible
- I/O: If input file open fails then warn and carry on

I/O: Output files should not be compressed                                        Test: compressed input, input with no extension, input
                                                                                  with no delimiter, combo?
- I/O: Create output directories if do not exist                                  Include log; abort if create fails.

- Intensities: Expand fixed match to "_int.txt"                                   As original

- Program log: Replace fixed "ayb" with prefix                                    hhmm not sufficient for parallel runs

- Program log: Add initial information line

Refactor

- New message functionality to return message string                             For use with perror, length of string? vsnprintf?

- Change message to use CSTRING instead of fixed length

- Add segmentation violation handler

- Message: move message file check to filename routine                           So can return default

- ayb_options, move structure to source file, add get for each item          Only when there is an item to get

- Add descriptions to func declarations in headers          Not needed with Doxygen?

- Make --version option comply to GNU coding standards

- xio: rename initialise_aybstd to not contain 'ayb'


* xio, matrix, cluster, tile not yet documented

* tidy dirio.h on next change          ???

**Index  Note**                                                                  **Resolution**

   1    Divide by zero does not cause FPE so not tested

| Index | Task | Additional Requirements | Completed | Notes |
|---|---|---|---|---|
| 9 | Matrix Input: Locate, read, store, tidy up; Read M, N, P | Requires args M (M), N (N), P (P); | 13/04/2010 16/04/2010 | Read and written, not stored. Stored in new ayb_model. |
| 10 | Processed Intensities: Calculate and store, tidy up | AYB struct taken from AYBc with int16 intensities replaced with tile | 20/04/2010 | |
| 11 | Initial Sequence: By maximum intensity | use call_base_simple | 20/04/2010 | |
| 12 | Sequence output: Create file, write data, close | | 21/04/2010 | NUC needs raw type file? NUC changed to use XFILE |
| 16 | Matrix: Add read_methods for multiple styles | 1) Intensities 2) As rows of columns. Move matrix read from cluster. | 13/04/2010 | New functions new_MAT_from_line, read_MAT_from_column_file |
| 17 | Initial Lambda: Ignore weights | use estimate_lambdaOLS | 26/04/2010 | |
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**Notes**

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|---|---|---|
| array.def | Changes from git central | New rcons*_list to appends to a given node (should be last) |
| tile | Changes from git central | New read_TILE keeps cluster list in input file order |
| dirio | Store location of predetermined matrices; new open_matrix; new method returns name of current file (for message). | set_path becomes more generic set_location; |
| matrix | set_MAT, transpose_inplace, invert taken from AYBc. | In invert change WORK/WORKSPACE type to real_t |
| lapack | For matrix, getrf/i taken from AYBc. | change WORK type to float in sgetri |
| nuc | Taken from AYBc; defines NUC and PHREDCHAR types; isprob taken from utility. | Read/show changed to use XFILE; show_PHREDCHAR print space if out of range; replace printf with message NUC_*, *_PHRED do not need to be public? NUC_ to enum? What about array construct? |

| | | |
|---|---|---|
| call_bases | New; parts taken from AYBc call_bases (more later). | |
| intensities | New; parts taken from AYBc process intensities (more later). | |
| lambda | New; parts taken from AYBc estimate_lambda (more later). | |
| ayb_model | New; parts taken from AYBc ayb. (more later). | show_AYB use fp not stderr |
| utility.h | Remove NBASE def - now in nuc | |

**Consider**

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|---|---|
| ayb_model | Make bases & quals a list (per cluster) |
| ayb_model | Does AYB struct need to be public at all? or even the standard functions? |

| Index | Task | Additional Requirements | Completed | Notes |
|---|---|---|---|---|
| 6 | File I/O: Locate, open/ create, read/write, close | Requires args input (i), output (o); search input dir for pattern matched files. | 24/03/2010 | |
| 7 | Data Structures: Tile, Cluster, Matrix | Use as is from Central Repository | 01/04/2010 | |
| 8 | Intensities Input: Locate, read, store, tidy up | Requires arg ncycles (n) | 01/04/2010 | |
| 9 | Matrix Input: Locate, read, store, tidy up; Read M, N, P | Use ncycle | postponed | |
| 13 | Replace message macros with vfprintf | Change call function name to message | 12/03/2010 | |
| 14 | Expand message severity list to include debug | | 24/03/2010 | |
| 15 | Configure Doxygen; add comments to new HM files | | 29/03/2010 | Adopted files still to do |
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| Index | Task | Additional Requirements | Completed | Notes |
|---|---|---|---|---|
| 1 | Initial system: Make; Run | IDE develop but also build from command line | 10/03/2010 | Make with gcc. Makefile. |
| 2 | Program Version | Version file | 08/03/2010 | Store version and date. |
| 3 | Program arguments: Read and store (infrastructure) | Initial args help, licence, version, usage (default) | 08/03/2010 | Use getopt_long; Use include file method to do bulk output. |
| 4 | Program Log: Infrastructure | Log message from a Type and Severity; allow for parameters of varying type. Output to unique filename (from date/time) in configurable location. | 10/03/2010 | Requires args logfile (e), loglevel (l); Hide implementation from user. |
| 5 | Signal Handler | Initially interrupt and floating point exception | 10/03/2010 | On interrupt get confirmation first. Divide by zero does not cause FPE so not tested |
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