**NAME**

init – initialize an execution

**SYNOPSIS**

#include “SDM.h”

void init(conf);

**ARUMENTS**

conf – configuration parameters for SDM execution

**DESCRIPTION**

Read file size and create queue. If the commit mode is DIST, allocate some buffer

**RETURN VALUES**

**init** does not return any value.

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**NAME**

destroy – destroy the created queue and buffers

**SYNOPSIS**

#include “SDM.h”

void destroy(conf);

**ARUMENTS**

conf – configuration parameters for SDM execution

**DESCRIPTION**

Destroy the created queue and buffers

**RETURN VALUES**

**destroy** does not return any value.

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**NAME**

create\_process – create a new process

**SYNOPSIS**

#include “SDM.h”

void create\_process(function, &pid, arg);

**ARUMENTS**

function – scanner and decompressor functions

&pid – process ID

arg – process argument for communicating each other

**DESCRIPTION**

Create a new process with process id that will execute the function with arg

**RETURN VALUES**

**create\_process** does not return any value.

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**NAME**

join\_process – wait for worker processes

**SYNOPSIS**

#include “SDM.h”

void join\_process(conf);

**ARUMENTS**

conf – configuration parameters for SDM execution

**DESCRIPTION**

Wait for worker processes with the configured number of processes

**RETURN VALUES**

**join\_process** does not return any value.

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**NAME**

produce – enqueue data into queue

**SYNOPSIS**

#include “SDM.h”

void produce(dst, &val, sizeof(val));

**ARUMENTS**

dst – dst’s PID

val – data

sizeof(val) – size of data

**DESCRIPTION**

Enqueue val into software queue to send to dst

**RETURN VALUES**

**produce** does not return any value.

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**NAME**

consume – dequeue data

**SYNOPSIS**

#include “SDM.h”

void consume(src, &val, sizeof(val));

**ARUMENTS**

src – src’s PID

val – data

sizeof(val) – size of data

**DESCRIPTION**

Dequeue val from src

**RETURN VALUES**

**consume** does not return any value.

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**NAME**

scan – execute scan process

**SYNOPSIS**

#include “SDM.h”

void scan(conf);

**ARUMENTS**

conf - configuration parameters for SDM execution

**DESCRIPTION**

Forward a speculative block boundary to targeted processes

**RETURN VALUES**

**scan** does not return any value.

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**NAME**

decompress – execute decompress process

**SYNOPSIS**

#include “SDM.h”

void decompress(decomp\_pid);

**ARUMENTS**

decomp\_pid – decomp’s PID

**DESCRIPTION**

Compute the compressed data with speculative boundary

**RETURN VALUES**

**decompress** does not return any value.

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**NAME**

merge – execute merge process

**SYNOPSIS**

#include “SDM.h”

void merge(conf);

**ARUMENTS**

conf – configuration parameters for SDM execution

**DESCRIPTION**

Write a decompressed data in output stream (Centralized commit). The merger process is responsible for misspeculation detection and recovery. It compares the predicted **pos (next\_pos)** value received from the scanner process with the corresponding, non-speculative **pos** value received from a decompressor process.

**RETURN VALUES**

**merge** does not return any value

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**NAME**

recover\_misspec – handle recovery from mis-speculation

**SYNOPSIS**

#include “SDM.h”

void recover\_misspec(real\_pos);

**ARUMENTS**

real\_pos – non-speculative pos value

**DESCRIPTION**

If a misspeculation is detected, all speculative scanner and de- compressor processes are squashed, and the rest of the program is sequentially executed.

**RETURN VALUES**

**recover\_misspec** does not return any value.

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**NAME**

insert\_merge\_list –inset decompressed chunk in linked list

**SYNOPSIS**

#include “SDM.h”

void insert\_merge\_list(output\_buf, len, merge\_list);

**ARUMENTS**

output\_buf – buffer for output

len – buffer length

merge\_list – linked list for each process

**DESCRIPTION**

Insert decompressed chunk in linked list; the decompressed chunk is stored in merge list for each process (Distributed commit)

**RETURN VALUES**

**merge\_list** does not return any value.

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**NAME**

predict\_boundary – Find the boundary of block

**SYNOPSIS**

next\_pos = **predict\_boundary**(conf.in\_file, pos, conf.chunk\_size, &eof)

**ARUMENTS**

conf.in\_file – Name of input file

pos – predicted pos

conf.chunk\_size = Chunk size in independently decompressible units

&eof – end of file

**DESCRIPTION**

**predict boundary** is a programmer-defined function implementing a block boundary prediction algorithm. This function returns the starting position of the next chunk, which is sent to both decompressor stage (for decompression) and merger stage (for misspeculation detection).

**RETURN VALUES**

**next\_pos** - returns the starting position of the next chunk, which is sent to both decompressor stage and merger stage.

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**NAME**

decompress\_chunk – decompress a given chunk

**SYNOPSIS**

**decompress\_chunk**(conf.in\_file, pos, &err, &real\_pos)

**ARUMENTS**

conf.in\_file – Name of input file

pos – predicted pos

&err – length of the decompressed data

&real\_pos – sets real pos to be used for misspeculation detection

**DESCRIPTION**

Function **decompress\_chunk** (programmer-defined function)performs actual decompression of chunk size IDUs starting from the position indicated by pos and calculate the real pos for misspeculation detection.

**RETURN VALUES**

**decompress\_chunk** does not return any value.

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