Assignment name : queue

Expected files : queue.c

Allowed functions: malloc free

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Implement a queue data structure in C, using the following structures in your

code:

struct s\_node {

void \*content;

struct s\_node \*next;

};

struct s\_queue {

struct s\_node \*first;

struct s\_node \*last;

};

A queue uses FIFO (first-in fist-out) ordering :

items are removed from the data structure in the same order that they are added.

Implement 5 functions for the following queue operations :

- init() : Initialize the queue.

The first and last pointers are set to NULL.

- enqueue(queue, item) : Add an item to the end of the queue.

- dequeue(queue) : Remove the first item from the queue and return it.

If the queue is empty, the function returns NULL.

- peek(queue) : Return the first item of the queue.

If the queue is empty, the function returns NULL.

- isEmpty(queue) : Return 1 if the queue is empty, 0 otherwise.

These functions must be declared as follows:

struct s\_queue \*init(void);

void enqueue(struct s\_queue \*queue, void \*content);

void \*dequeue(struct s\_queue \*queue);

void \*peek(struct s\_queue \*queue);

int isEmpty(struct s\_queue \*queue);