

# Project4

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Join Table

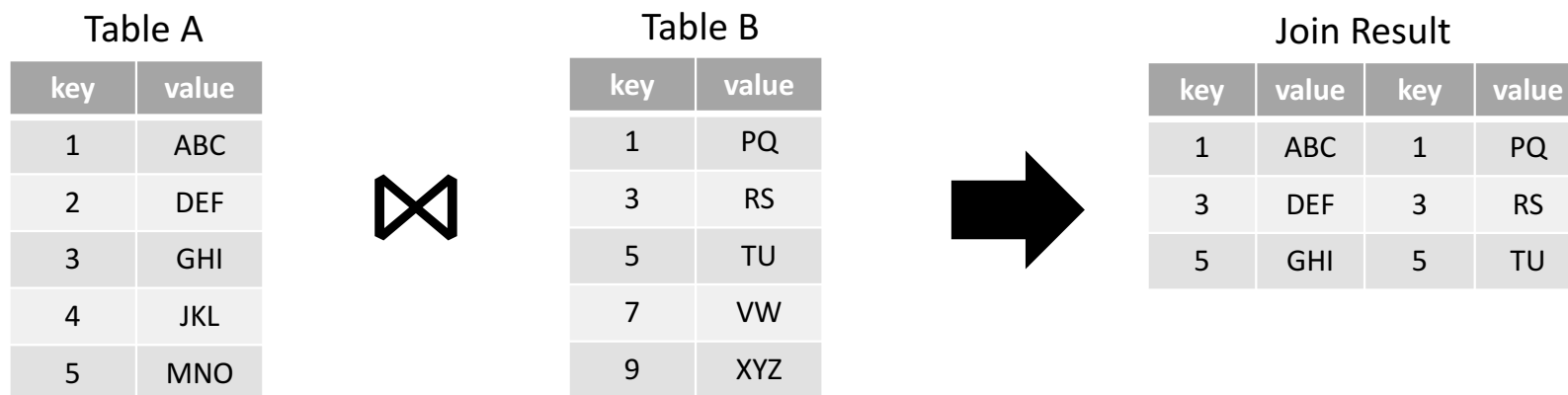
# Join Table

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- Your database systems don't consider JOIN table operation yet.
- Our goal is to implement a **JOIN operation** with maintaining maximum memory usage.

# Project Specification

- Join operation takes two table IDs.
- Recall that, each table contains <key (8B integer) , value (120B string)> pairs.
- We will implement natural join operation based on the same key.



# Project Specification

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➤ Your library (libbpt.a) should provide those API services.

1. `int init_db (int buf_num);`
2. `int open_table (char * pathname);`
3. `int insert (int table_id, int64_t key, char * value);`
4. `char * find (int table_id, int64_t key);`
5. `int delete (int table_id, int64_t key);`
6. `int close_table(int table_id);`
7. `int shutdown_db(void);`
8. `int join_table(int table_id_1, int table_id_2, char * pathname);`
  - Do natural join with given two tables and write result table to the file using given pathname.
  - Return 0 if success, otherwise return non-zero value.
  - Two tables should have been opened earlier.

# Project Specification

- The result of *join\_table(a, b)* should be written when the command returns successfully.
- Result file format should contain a line of **“a.key,a.value,b.key,b.value”** where each items are separated by comma.
- a.key == b.key (by join property)
- Each line should be sorted by the same key in increasing order.
- We will check the correctness of join result by this file.

Join Result

key	value	key	value
1	ABC	1	PQ
3	DEF	3	RS
5	GHI	5	TU

Result File Format

```
1,ABC,1,PQ  
3,DEF,3,RS  
5,GHI,5,TU
```

# Project Specification

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- While *join\_table()* operates, your system **ONLY** uses a memory region that your buffer manager maintains and should not use another memory area.
  - That means, you should use a memory region that is allocated during *init\_db()* for buffer manager and you can't use a dynamic memory allocation (such as *malloc*) while doing *join\_table()* operation.
- We will measure each of the student's join operations and rank them accordingly.