Московский Авиационный Институт

(Национальный Исследовательский Университет)

Институт №8 "Компьютерные науки и прикладная математика" Кафедра №806 "Вычислительная математика и программирование"

Лабораторная работа №2 по курсу «Операционные системы»

Группа: М8О-214Б-23

Студент: Маркин Р.В.

Преподаватель: Бахарев В.Д.

Оценка:

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Постановка задачи

Вариант 3.

Отсортировать массив целых чисел при помощи параллельной сортировки слиянием

Общий метод и алгоритм решения

Используемые функции и библиотеки:

- **dispatch_semaphore_create**: Используется для создания семафора GCD, который ограничивает количество одновременно работающих потоков. Максимальное значение семафора задаётся при инициализации.
- **dispatch_semaphore_wait**: Используется для уменьшения значения семафора. Если значение семафора равно нулю, поток блокируется до тех пор, пока другой поток не увеличит значение семафора.
- **dispatch_semaphore_signal**: Используется для увеличения значения семафора, освобождая "слот" и позволяя другому потоку начать выполнение.
- pthread_create: Используется для создания новых потоков. Каждый поток выполняет функцию threaded mergesort, обрабатывая часть массива.
- **pthread_join**: Используется для ожидания завершения выполнения потоков. Гарантирует, что программа не завершит работу, пока все потоки не завершат свои задачи.
- **malloc и free**: Используются для динамического выделения памяти под массивы и их временные копии, а также для освобождения этой памяти после использования.
- rand и srand: Используются для генерации случайных чисел, заполняющих массив. Инициализация генератора выполняется функцией srand для обеспечения случайности.
- **merge**: Выполняет слияние двух отсортированных подмассивов в один отсортированный массив. Это ключевая часть алгоритма сортировки слиянием.
- **threaded_mergesort**: Основная рекурсивная функция, реализующая параллельную сортировку слиянием. Использует потоки для разделения работы на части и семафоры для ограничения их количества.
- **seq_merge_sort**: Реализует последовательную сортировку слиянием для случая, когда потоки не могут быть созданы (например, если семафор недоступен).
- gettimeofday: Используется для измерения времени выполнения программы.

Структуры данных

- ThreadArgs: Структура для передачи аргументов в потоки. Содержит:
 - о аггау: Указатель на массив, который необходимо сортировать.
 - left: Начальный индекс текущего сегмента массива.
 - о right: Конечный индекс текущего сегмента массива.

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Функции программы

- merge: Выполняет слияние двух отсортированных подмассивов. Использует временные массивы для сохранения данных из левого и правого подмассивов, после чего объединяет их в общий массив.
- **seq_merge_sort**: Последовательная реализация сортировки слиянием. Используется, если потоки недоступны или требуется обработка небольших частей массива.
- threaded mergesort: Параллельная реализация сортировки слиянием:
 - Делит массив на две части.
 - Создаёт потоки для сортировки каждой части, если доступен "слот" в семафоре.

- Если поток не может быть создан, рекурсивно вызывает seq_merge_sort для обработки массива в текущем потоке.
- После завершения потоков объединяет результаты с помощью функции merge.

• main:

- Проверяет корректность введённых параметров.
- Инициализирует массив случайными числами.
- Создаёт семафор GCD для ограничения числа потоков.
- Вызывает функцию threaded mergesort для выполнения сортировки.
- Проверяет отсортированность массива.
- Выводит время выполнения, количество вызовов сортировки, операций слияния и созданных потоков.
- Освобождает выделенную память.

Основная логика программы

1. Инициализация данных:

- о Принимаются параметры командной строки: количество потоков и размер массива.
- о Генерируется массив случайных чисел.

2. Создание семафора:

• Семафор GCD создаётся с максимальным значением, равным числу потоков.

3. Параллельная сортировка:

- о Функция threaded_mergesort разделяет массив на две части и сортирует их.
- о Если доступен "слот", создаётся новый поток для обработки части массива.
- Если поток не может быть создан (нет свободных слотов), выполняется последовательная сортировка.

4. Слияние результатов:

о После завершения сортировки каждой части массива вызывается функция merge.

5. Проверка результата:

• Проверяется, отсортирован ли массив после выполнения программы.

6. Вывод информации:

- Время выполнения программы.
- о Количество вызовов функций сортировки и слияния.
- Количество созданных потоков.

7. Освобождение ресурсов:

- Освобождается память, выделенная для массива.
- Семафор автоматически освобождается системой (на macOS).

Особенности:

POSIX-семафоры (неименованные, sem_init) в macOS сейчас объявлены устаревшими (deprecated). В некоторых версиях они могут возвращать ошибки (например, ENOSYS) или вообще не оказывать ожидаемого эффекта. То есть Apple прямо говорит: «Не стоит использовать неименованные POSIX-семафоры в современных macOS-приложениях». Из-за этого у нас могут возникнуть проблемы при запуске, когда семафор не блокирует или не даёт «слотов» потокам.

GCD-семафоры не просто не устаревшие, а наоборот — **рекомендуемый способ** организовать семафороподобную синхронизацию на macOS/iOS. Они активно используются внутри GCD (Grand Central Dispatch), который оптимизирован под многоядерные CPU, систему очередей и пулов потоков Apple.

Код программы

parallel merge sort.c

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
#include <sys/time.h>
#include <pthread.h>
#include <dispatch/dispatch.h> // Для GCD-семафоров (macOS)
typedef struct {
  int *array;
 int left;
  int right;
} ThreadArgs;
// счетчики для проверки
static <u>int merge calls = 0; // сколько раз произошло слияние</u>
<u>static int sort calls = 0; // сколько раз вызвана сортировка</u>
static int threads created = 0; // сколько потоков реально
<u>создано</u>
static dispatch semaphore t gcd sem = NULL;
// Слияние двух отсортированных подмассивов
void merge(int *array, int 1, int m, int r) {
```

```
// Увеличим счётчик количества слияний (для подтверждения
<u>"метода слияния")</u>
   sync fetch and add(&merge calls, 1);
  int n1 = m - 1 + 1;
 int n2 = r - m;
  int *L = (int *)malloc(n1 * sizeof(int));
 int *R = (int *)malloc(n2 * sizeof(int));
 if (!L || !R) {
   perror("malloc for merge");
   exit(EXIT FAILURE);
  1
  for (int i = 0; i < n1; i++) {</pre>
     L[i] = array[l + i];
}
 for (int j = 0; j < n2; j++) {
     R[j] = array[m + 1 + j];
 <u>}</u>
 <u>int i = 0, j = 0;</u>
 int k = 1;
 while (i < n1 && j < n2) {</pre>
   if (L[i] <= R[j]) {</pre>
        array[k++] = L[i++];
    } else {
```

```
array[k++] = R[j++];
 }
 <u>while (i < n1) {</u>
    array[k++] = L[i++];
 __}
 while (j < n2) {</pre>
  array[k++] = R[j++];
 }
 free(L);
 free(R);
// Обычная рекурсивная сортировка слиянием.
void seq merge sort(int *array, int left, int right) {
 if (left < right) {</pre>
    int mid = left + (right - left) / 2;
    seq merge sort(array, left, mid);
   seq merge sort(array, mid + 1, right);
 merge(array, left, mid, right);
 }
```

```
// Параллельная сортировка слиянием с семафором
void *threaded mergesort(void *args) {
   sync fetch and add(&sort calls, 1);
 ThreadArgs *threadArgs = (ThreadArgs *)args;
 int *array = threadArgs->array;
 int left = threadArgs->left;
  int right = threadArgs->right;
 if (left < right) {</pre>
      int mid = left + (right - left) / 2;
      ThreadArgs leftArgs = { array, left, mid };
      ThreadArgs rightArgs = { array, mid + 1, right };
      pthread t leftThread, rightThread;
      int leftCreated = 0, rightCreated = 0;
      long left wait res = dispatch semaphore wait(gcd sem,
DISPATCH TIME NOW);
      if (left wait res == 0) {
       <u> // Слот есть - пытаемся создать поток</u>
          int ret = pthread create(&leftThread, NULL,
threaded mergesort, &leftArgs);
```

```
if (ret == 0) {
           sync fetch and add(&threads created, 1);
       leftCreated = \overline{1;}
   } else {
делаем обычную сортировку
        perror("pthread create (left) failed");
      dispatch semaphore signal(gcd sem);
        seq merge sort(array, left, mid);
  } else {
     // Нет свободного слота - делаем обычную сортировку
     seq merge sort(array, left, mid);
   }
     long right wait res = dispatch semaphore wait(gcd sem,
DISPATCH TIME NOW);
   if (right wait res == 0) {
       int ret = pthread create(&rightThread, NULL,
threaded mergesort, &rightArgs);
   if (ret == 0) {
        sync fetch and add(&threads created, 1);
      rightCreated = 1;
   perror("pthread create (right) failed");
           dispatch semaphore signal(gcd sem);
```

```
seq merge sort(array, mid + 1, right);
    } else {
     seq merge sort(array, mid + 1, right);
   }
   // Дожидаемся левого потока
   if (leftCreated) {
   pthread_join(leftThread, NULL);
    // Освобождаем слот
        dispatch semaphore signal(gcd sem);
  }
    // Дожидаемся правого потока
  if (rightCreated) {
     pthread join(rightThread, NULL);
   dispatch semaphore signal(gcd sem);
   }
// Слияние
    merge(array, left, mid, right);
 <u>}</u>
 return NULL;
}
```

```
int main(int argc, char *argv[]) {
 if (argc < 3) {
      fprintf(stderr, "Usage: %s <max threads> <array size>\n",
arqv[<mark>0</mark>]);
     <u>return EXIT FAILURE;</u>
 }
  int max threads = atoi(argv[1]);
  int array size = atoi(argv[2]);
  if (max threads <= 0 || array size <= 0) {</pre>
     fprintf(stderr, "Error: max threads and array size must be
positive integers.\n");
 <u>return EXIT FAILURE;</u>
 __}
  int *array = (int *)malloc(array size * sizeof(int));
 if (!array) {
   perror("malloc");
     <u>return EXIT FAILURE;</u>
 - }
 // Инициализируем массив случайными значениями
 srand((unsigned) time(NULL));
 for (int i = 0; i < array size; i++) {</pre>
    array[i] = rand() % 1000000;
```

```
gcd sem = dispatch semaphore create(max threads);
// Начинаем считать время
struct timeval start, end;
gettimeofday(&start, NULL);
// Запускаем параллельную сортировку
ThreadArgs args = { array, 0, array_size - 1 };
threaded mergesort(&args);
gettimeofday(&end, NULL);
double elapsed = (end.tv_sec - start.tv_sec) +
                 (end.tv usec - start.tv usec) / 1000000.0;
 // Проверка на отсортированность
int sorted = 1;
for (int i = 1; i < array size; i++) {</pre>
  <u>if (array[i] < array[i - 1]) {</u>
   sorted = 0;
  <u>break;</u>
_____}
}
```

```
printf("Array is %s\n", (sorted ? "sorted" : "NOT sorted"));

printf("Time taken: %.6f seconds\n", elapsed);

printf("Number of mergesort (threaded) calls: %d\n",
sort_calls);

printf("Number of merges: %d\n", merge_calls);

printf("Threads created: %d\n", threads_created);

free(array);

return_EXIT_SUCCESS;
}
```

Протокол работы программы

Число потоков	Время исполнения (мс)	Ускорение	Эффективность
1	189458	1	1
2	187346	1,01127	0,50564
4	106772	1,77442	0,44360
8	106573	1,77773	0,22222
16	128937	1,46938	0,09184
32	199237	0,95092	0,02972

Ускорение показывает, во сколько раз применение параллельного алгоритма уменьшает время решения задачи по сравнению с последовательным алгоритмом. Ускорение определяется величиной SN = T1 / TN, где T1 – время выполнения на одном потоке, TN – время выполнения на N потоках.

Эффективность показывает, насколько хорошо используются ресурсы при параллельном выполнении алгоритма. Она определяется как отношение ускорения к количеству используемых потоков. Эффективность вычисляется по формуле E = SN / N, где SN - ускорение, а N - количество потоков.

stat64("/System/Volumes/Prehoot/Cryptexes/OS/System/Library/Frameworks/LocalAuthentication.framework/Support/SharedUtils.tramework/Versions/A/SharedUtils\0", 0x7FF7B1C57A30, stat64 ("/System/Library/Frameworks/Local Authentication.framework/Support/Shared Utils. Utils (Utils, Utils, Ut", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AppleVPA.framework/Versions/A/AppleVPA\0 vPA.framework/Versions/A/AppleVPA\0", 0x7FF7BIC57A50, 0x0) = -12 ", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AppleVPA.framework/Versions/A/AppleVPA\0 ", 0x7FF7B1C57AD0, 0x0) = -12 rameworks/SAObjects.framework/Versions/A/SAObjects\0 stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SAObjects.0", 0x7FF7B1C57A50, 0x0) = -12stat64("/System/Library/PrivateFrameworks/DebugSymbols.framework/Versions/A/DebugS ymbols\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Debug Symbols 0", 0x7FF7BIC57A50, 0x0) = -12 $stat64("/System/Library/PrivateFrameworks/DebugSymbols.framework/Versions/A/DebugS = -1\ 2$ eSymbolication\(''\System/Library\PrivateFrameworks\CoreSymbolication.framework\Versions\A/CoreSymbolication\('', 0x/FF/BIC5/AD0, 0x0\) stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CoreTime\0", 0x7FF7B1C57A50, 0x0) = -1 2 , 0x7FF7B1C57AD0, 0x0) state 4("/System/Library/PrivateFrameworks/CoreTime.framework/Versions/A/CoreTime \0" $^{\circ}$ $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/Rapport.framework/Versions/A/Rapport \ '', and the sum of the content of the c$ stat64("/System/Yolumes/Preboot/Cryptexes/OS/System/Library/PriyateFrameworks/Rapport\0", 0x7FF7BIC57A50; 0x0) = -1 2 $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/Rapport.framework/Versions/A/Rapport \ "-12"$ stat64("//System/Library/PrivateFrameworks/CoreDuctContext.framework/Versions/A/CoreDuctContext(0", 0x7FF7B1C57AD0, 0x0)" = -12 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CoreDuetContext.framework/Versions/A/CoreDuetContext(0", 0x7FF7B1C57A40, 0x0) = -12 DuetContext\0", 0x7FF7B1C57AD0, 0x0) = -12 $0x7FF7B1C57AD0,0x0) Library/Frameworks/Intents.framework/Versions/A/Intents \ 0",$ work/Versions/A/Intents\0", 0x/FF/BIC57A60, 0x0) = -12 $0x7FF7B1C57AD0,0x0) Library/Frameworks/Intents.framework/Versions/A/Intents \ 0",$ \0", 0x7FF7B1C57AD0, 0x0) = -1 2 \(\text{1.1} \) stat64("/System/Volumes/Prehoot/Cryptexes/OS/System/Library/PrivateFrameworks/Apple80211.framework/Versions/A/Apple80211\0", 0x7FF7B1C37A50, 0x0) = -1 2 \0", 0x7FF7B1C57AD0, 0x0) = -1 2 \(\text{1.1} \) $stat64 ("/System/Volumes/Preboot/Cryntexes/QS/System/Library/PrivateFrameworks/CoreWiFi\0", 0x7FF/BIC5/A50, 0x0) = -1.2$

```
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stat64("/System/Library/PrivateFrameworks/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/Versions/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoardServices.framework/A/BackBoa
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\label{eq:control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_control_co
\label{eq:total_condition} TrustEvaluationAgent. In the proof of the
\0", 0x7FF/B1C5/AD0, 0x0) = -12
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateErameworks/DiskImages.framework/Versions/A/DiskImages.0", 0x/FF/BIC5/A50, 0x0) = -12
\label{localization} $$ \int_0^\infty \frac{d^4(''/System/Library/PrivateFrameworks/DiskImages.framework/Versions/A/DiskImages}{= -1.2} 
0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/EAP8021X.framework/Versions/A/EAP8021X\
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/EAP8021X\0", 0x/FF7B1C57A50, 0x0) = -12
0", 0x7FF/B1C57AD0, 0x0) | Example 12 | System/Library/Private Frameworks/EAP8021X.framework/Versions/A/EAP8021X\ = -1 2
stat64("/System/Library/PrivateFrameworks/RemoteServiceDiscovery.framework/Versions/A/RemoteServiceDiscovery\0"; 0x7FF7BIC57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/RemoteServiceDiscovery.Tramework/Versions/A/RemoteServiceDiscovery\0", 0x7FF7BIC57A40, 0x0)
stat64 ("/System/Library/PrivateFrameworks/RemoteServiceDiscovery.framework/Versions/A/RemoteServiceDiscovery.0", 0x7FF7B1C57AD0, 0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/RemoteXPC\0", 0x7FF7B1C57A50, 0x0)" = -1 2
0x7FF7B1C57AD0,0x0) \begin{tabular}{l} stat64("/System/Library/PrivateFrameworks/EFILogin.framework/Versions/A/EFILogin\0", = -1.2 \end{tabular}
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/EFILogin\0", 0x7FF7B1C57A50, 0x0) = -1 2
0x7FF7B1C57AD0,0x0) \begin{tabular}{l} &\texttt{EFILogin.framework/Versions/A/EFILogin.org} \\ &\texttt{EFILogin.framework/Versions/A/EFILogin.org} \\ &\texttt{EFILogin.org} \\ &\texttt{EFIL
                                             stat64("/usr/lib/libcsfde.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                            stat6 \underline{\underline{4}}(\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline{\phantom{0}}\underline
0x0
                                            stat64("/usr/lib/libcsfde.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                             stat64("/usr/lib/libcurl.4.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          = -12
                                            stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libcurl.4.dylib\0", 0x7FF7B1C57A80,
0x0
                                            stat64("/usr/lib/libcurl.4.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          = -12
stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/AppSupport/0", 0x/FF/B1C57A50, 0x0)
```

```
rt\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AppSupport.framework/Versions/A/AppSuppo
stat64("/System/Library/Frameworks/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/ApplicationServices.framework/ApplicationServices.framework/ApplicationServices.framework/App
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/Frameworks/ApplicationServices.0", 0x7FF/BIC57A40, 0x0) = T 2
stat64("/System/Library/Frameworks/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/Versions/A/ApplicationServices.framework/ApplicationServices.framework/ApplicationServices.framework/ApplicationServices.framework/App
stat64("/System/Library/PrivateFrameworks/InternationalTextSearch.framework/Versions/A/InternationalTextSearch\0",0x7FF7BIC57AD0,0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/InternationalTextSearch:Tramework/Versions/A/InternationalTextSearch\0", 0x7FF7B1C57A30, 0x0)
stat64("/System/Library/PrivateFrameworks/InternationalTextSearch.framework/Versions/A/InternationalTextSearch\0",0x7FF7B1C57AD0,0x0) = -1 2
count\0", 0x/FF/B1C5/AD0, 0x0) rivateFrameworks/AppleAccount.framework/Versions/A/AppleAc
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Apple Account.framework/Versions/A/AppleAccount\0", 0x7FF7B1C57A50, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/AppleIDSSOAuthentication.framework/Versions/A/AppleIDSSOAuthentication\0", 0x7FF7B1C57AD0, 0x0) = -1 2
DSSO stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/AppleI 0x0) Authentication.tramework/Versions/A/AppleIDSSOAuthentication\0", 0x7FF/BIC5/A30,
ns/A/AppleIDSSOAuthentication. U^{"}, 0x7FF7B1C57AD0, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/CryptoKitCBridging.framework/Versions/A/CryptoKitCBridging\0", 0x/FF/BIC5/AD0, 0x0)
KitCBridging.framework/Versions/A/CryptoKitCBridging\U'', 0x7FF7B1C57A40, 0x0)
stat64("/System/Library/PrivateFrameworks/CryptoKitCBridging.framework/Versions/A/CryptoKitCBridging\0", 0x7FF7BIC57AD0, 0x0) = -1 2
stat64("/System/Library/Frameworks/Kerberos.framework/Versions/A/Libraries/libHeimdal Proxy.dylib\0", 0x7FF/B1C57AD0, 0x0)
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/Frameworks/Kerberos.framework/Versions/A/Libraries/libHeimdalProxy.dylib(0", 0x7FF7B1C57A40, 0x0) = -1 2
stat64("/System/Library/Frameworks/Kerberos.framework/Versions/A/Libraries/libHeimdal=-12
0x7FF7B1C57AD0, 0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/Frameworks/AudioUnit.framework/Versions/A/AudioUnit\0", 0x7FF/BIC57A60, 0x0)
{\bf gZip}\0", {\bf vat}64("/System/Library/PrivateFrameworks/StreamingZip.framework/Versions/A/StreamingZip.0", 0x7FF7B1C5/AD0, 0x0)
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/StreamingZip.framework/Versions/A/StreamingZip/0", 0x7FF7B1C57A50, 0x0) = -1.2
{\bf gZip\backslash 0'', stat64(''/System/Library/PrivateFrameworks/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/A/StreamingZip.framework/Versions/A/StreamingZip.framework/Versions/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.framework/A/StreamingZip.frame
stat64("/System/Library/PrivateFrameworks/DuetActivityScheduler.framework/Versions/A/DuetActivityScheduler\0", 0x7FF7BIC57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/DuetActivityScheduler.framework/Versions/A/DuetActivityScheduler\0", 0x7FF7BIC5/A40, 0x0\"=-1
stat64("/System/Library/PrivateFrameworks/DuetActivityScheduler.framework/Versions/A/DuetActivityScheduler\0", 0x7FF7BIC57AD0, 0x0)
                    stat64("/usr/lib/swift/libswiftObjectiveC.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/usr/lib/swift/libswiftObjectiveC.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                 = -12
                                                                                                                                                                                                                                                     = -12
                    stat64("/usr/lib/swift/libswiftos.dylib\0", 0x7FF7B1C57AD0, 0x0)
```

```
0x7FF7B1C57A80, 0x0) \label{eq:continuous_preboot_cryptexes_os_usr_lib_swift_libswiftos.dylib_0"} \\ 0x7FF7B1C57A80, 0x0) \label{eq:continuous_preboot_cryptexes_os_usr_lib_swift_libswiftos.dylib_0"} 
                              stat64("/usr/lib/swift/libswiftos.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Intents Foundation.0"; 0x7FF7BIC57A40, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/IntentsFoundation.framework/Versions/A/IntentsFoundation(", 0x7FF7BIC57AD0, 0x0)" = -12
0x7FF7B1C57AD0,0x0) Library/Frameworks/PushKit.framework/Versions/A/PushKit\0'', 0x7FF7B1C57AD0,0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/Frameworks/PushKit.framework/Versions/A/PushKit(0", 0x7FF/B1C57A60, 0x0) = -1 2
0x7FF7B1C57AD0,0x0) Library/Frameworks/PushKit.framework/Versions/A/PushKit\0'', 2000 and 2
0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/C2.framework/Versions/A/C2\0",
stat64("/System/Yolumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/C2.framework/Versions/A/C2\0", 0x7FF7B1C5/A60, 0x0)
0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/C2.framework/Versions/A/C2\0",
stat64("/System/Library/Frameworks/QuickLookThumbnailing.framework/Versions/A/QuickLookThumbnailing.0", 0x7FF/BIC5/AD0, 0x0)
stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/Frameworks/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Framework/Versions/A/QuickLookThumbnailing.library/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Framework/Fr
stat64("/System/Library/Frameworks/QuickLookThumbnailing.framework/Versions/A/QuickLookThumbnailing.0", 0x7FF7BIC57AD0, 0x0) = -1 2
0x7FF7B1C57AD0, 0x0) \\ \text{Espresso} \\ \text{Espresso}. \\ \text{Frameworks/Espresso}. \\ \text{Framework/Versions/A/Espresso} \\ \text{O"}, \\ \text{Frameworks/Espresso}. \\ \text{Framework/Versions/A/Espresso}. \\ \text{Framework/A/Espresso}. \\ \text{Framework/Versions/A/Espresso}. \\ \text{Framework/Versions/A/Espresso}. \\ \text{Framework/A/Espresso}. \\ \text{Framework/A/Espresso}.
ces\0", 0x7FF7BFC57AD0, 0x0) = -1 2
stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/ANEServices(0", 0x7FF7BIC57A50, 0x0)" = -1~2
ces\0", stat64("/System/Library/PrivateFrameworks/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/Versions/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANEServices.framework/A/ANES
stat64("/System/Library/PrivateFrameworks/ProactiveSupport.framework/Versions/A/ProactiveSupport\0", 0x/FF/BIC5/AD0, 0x0)
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/ProactiveSupport.framework/Versions/A/ProactiveSupport.0", 0x/FF7BIC57A40, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/Versions/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/ProactiveSupport.framework/A/
stat64 ("/System/Library/PrivateFrameworks/CoreDuetDaemonProtocol.framework/Versions/A/CoreDuetDaemonProtocol\0", 0x/FF/BIC5/AD0, 0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CoreDuctDacmonProtocol/0", 0x7FF7BIC57A40, 0x0)
stat64("/System/Library/PrivateFrameworks/CoreDuetDaemonProtocol.framework/Versions/A/CoreDuetDaemonProtocol\0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/RTCReporting.framework/Versions/A/RTCReporting.framework/Versions/A/RTCRe
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/RTCReporting\0", 0x7FF7BIC57A50, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/RTCReporting.framework/Versions/A/RTCReporting.framework/Versions/A/RTCRe
stat64("//System/Library/PrivateFrameworks/AppleNeuralEngine.framework/Versions/A/AppleNeuralEngine(0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Apple NeuralEngine.0", 0x7FF7B1C57A40, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/AppleNeuralEngine.framework/Versions/A/AppleNeuralEngine\0", 0x7FF7B1C57AD0, 0x0)
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 $0x7FF7B1C57AD0,0x0) \label{eq:condition} tat64("/System/Library/Frameworks/CoreMIDI.framework/Versions/A/CoreMIDI\0", and a condition of the condition of the$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/Frameworks/CoreMIDI.framework/Versions/A/CoreMIDI\0", 0x7FF7B1C57A60, 0x0) = -I 2 0x7FF7B1C57AD0, 0x0) stat64("/System/Library/Frameworks/CoreMIDI.framework/Versions/A/CoreMIDI\0", stat64("/System/Library/PrivateFrameworks/IOSurfaceAccelerator.framework/Versions/A/IOSurfaceAccelerator.0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/IOSurfaceAccelerator.framework/Versions/A/IOSurfaceAccelerator\0", 0x7FF7BIC57A40, 0x0) = -1 oSurfaceAccelerator\U'', 0x7FF7B1C57AD0, 0x0) stat64("/System/Library/PrivateFrameworks/IOSurfaceAccelerator\U'', 0x7FF7B1C57AD0, 0x0) = -1 2 mote\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/MediaRemote.framework/Versions/A/MediaRemote.0", 0x7FF7B1C57A50, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AssistantServices.framework/Versions/A/AssistantServices\0", 0x7FF/BIC57AD0, 0x0) stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/AssistantServices.framework/Versions/A/AssistantServices\0", 0x7FF/B1C57A40, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AssistantServices.framework/Versions/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServices.framework/A/AssistantServic stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FMCoreLite\0",0x7FF7B1C57A50,0x0\"=-1 2" te\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/FMCoreLite.framework/Versions/A/FMCoreLite.framework/A/FMCo stat64("/usr/lib/libtidy.A.dylib\0", 0x7FF7B1C57AD0, 0x0) $stat \underline{64} \underline{("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libtidy. A. dylib \verb|\|0", 0x7FF7B1C57A80, and by the first of the first o$ 0x0)stat64("/usr/lib/libtidy.A.dylib\0", 0x7FF7B1C57AD0, 0x0) stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Engram.framework/Versions/A/Engram\0", 0x/FF7B1C57A60, 0x0) stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/AVFC apture.0", 0x/FF7B1C57A50, 0x0) = -1.2 $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/Quagga.framework/Versions/A/Quagga \ ", on the control of the c$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PriyateFrameworks/Quaggalo", 0x/FF/BIC5/A60, 0x0) 0x7FF7B1C57AD0,0x0) state4("/System/Library/PrivateFrameworks/Quagga.framework/Versions/A/Quagga\0", stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateErameworks/CMC apture.", 0x7FF7B1C57A50, 0x0)"=-12e\0'', 0x7FF/B1C5/AD0, 0x0) Erameworks/CMCapture.framework/Versions/A/CMCapture.framework/A/CMCapture.framework/A/CMCapture.framework/A/CMCapture.framework/A/CMCapture.framework/A/CMCapture.framework/A/CMCapture.fram rvices\0", 0x7FF7B1C57AD0, 0x0) stat64("/System/Volumes/Prehoot/Cryptexes/QS/System/Library/PrivateFrameworks/CloudServices(0", 0x7FF7B1C57A50, 0x0) = -1.2 rvices\0", 0x7FF7B1C57AD0, 0x0)

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stat64("//System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/HID.fr amework/Versions/A/HID\0", 0x7FF7BIC57A60, 0x0) = -12
0x7FF7B1C57AD0,0x0) \label{eq:constant} PrivateFrameworks/HID.framework/Versions/A/HID\0'',
stat64("/System/Library/PrivateFrameworks/MediaServices.framework/Versions/A/MediaServices\0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Media Services.framework/Versions/A/MediaServices\0", 0x7FF/B1C57A50, 0x0) = -I 2
stat64("/System/Library/PrivateFrameworks/MediaServices.framework/Versions/A/MediaServices\0", 0x7FF7B1C57AD0, 0x0) = -12
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Marco. transework/Versions/A/Marco.", 0x7FF7B1C57A60, 0x0) = -12
0x7FF7B1C57AD0,0x0) \label{eq:constant} PrivateFrameworks/Marco.framework/Versions/A/Marco\0'',
stat64("/System/Library/PrivateFrameworks/ProactiveEventTracker.framework/Versions/A/ProactiveEventTracker\0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/ProactiveEventTracker.framework/Versions/A/ProactiveEventTracker\0", 0x7FF7B1C57A40, 0x0) =
Stat64("/System/Library/PrivateFrameworks/ProactiveEventTracker.framework/Versions/A/ProactiveEventTracker.0", 0x7FF/B1C57AD0, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/PhoneNumbers.framework/Versions/A/PhoneNumbers\0", 0x7FF7BIC57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Phone Numbers.framework/Versions/A/Phone Numbers.0", 0x7FF7B1C57A50, 0x0) = -12
stat64("/System/Library/PrivateFrameworks/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers.framework/Versions/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/PhoneNumbers/A/Ph
stat64("/System/Library/PrivateFrameworks/URLFormatting.framework/Versions/A/URLF ormatting.0", 0x7FF7BIC57AD0, 0x0) = -1 2
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/URLFormatting.", 0x7FF7B1C57A50, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/URLFormatting.framework/Versions/A/URLF = -1 2
eUtilities\0", 0x7FF7B1C57AD0, 0x0\" = -12
. stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/AXCoreUtilities.0", 0x7FF7B1C57A40, 0x0) \stackrel{=}{=} -1 2
eUtilities\0", 0x7FF7B1C57AD0, 0x0\" = -12
           stat64("/usr/lib/libAccessibility.dylib\0", 0x7FF7B1C57AD0, 0x0)
ork/Versions/A/NetFS/0", 0x7FF7B1C5/A60, 0x0)\\
0x7FF7B1C57AD0,0x0) = -1.2 stat64("/System/Library/Frameworks/NetFS.framework/Versions/A/NetFS\0",
           stat64("/usr/lib/swift/libswiftDarwin.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) \\ = -12 \\ Cryptexes/OS/usr/lib/swift/libswiftDarwin.dylib \\ 0",
           stat64("/usr/lib/swift/libswiftDarwin.dylib\0", 0x7FF7B1C57AD0, 0x0)
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0", 0x7FF7B1C57AD0, 0x0) = -12 stat64("/System/Library/Frameworks/AVFoundation.framework/Versions/A/AVFoundation\ = -12
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stat64("/usr/lib/libquic.dylib\0", 0x7FF7B1C57AD0, 0x0)
                           stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libquic.dylib\0", 0x7FF7B1C57A80,
0x0)
                            stat64("/usr/lib/libquic.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/SystemPolicy\0", 0x7FF/B1C57A50, 0x0) = -12
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FindMyDevice.framework/Versions/A/FindMyDevice\0", 0x7FF7BIC57A50, 0x0\)
Device\0", 0x7FF7B1C57AD0, 0x0\)
stat64("/System/Library/PrivateFrameworks/FeatureFlagsSupport.framework/Versions/A/FeatureFlagsSupport.0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FeatureFlagsSupport()", 0x/FF/BIC5/A40, 0x0) = -1
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0", 0x7FF/B1C5/AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/FTServices.framework/Versions/A/FTServices\
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FTServices.framework/Versions/A/FTServices(0", 0x7FF7BIC57A50, 0x0)" = -I 2
0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/FTServices.framework/Versions/A/FTServices\" = -1 2
uage \ \ 0", stat 64("/System/Library/Frameworks/Natural Language.framework/Versions/A/Natural Language.fr
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/Frameworks/NaturalLanguage.framework/Versions/A/NaturalLanguage.0", 0x7FF7B1C57A50, 0x0) = -12
stat64("/System/Library/PrivateFrameworks/LoggingSupport.framework/Versions/A/LoggingSupport.0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/LoggingSupport." ("System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/LoggingSupport." ("System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/Preboot/Cryptexes/OS/System/Volumes/OS/System/Volumes/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/System/OS/Sy
stat64("/System/Library/PrivateFrameworks/LoggingSupport.framework/Versions/A/LoggingSupport.0",0x7FF7B1C57AD0,0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/MallocStackLogging.framework/Versions/A/MallocStackLogging\0", 0x/FF7BIC57AD0, 0x0
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/MallocStackLogging.1", 0x7FF7B1C57A40, 0x0) = -1
stat64("/System/Library/PrivateFrameworks/MallocStackLogging.framework/Versions/A/MallocStackLogging\0", 0x/FF/BIC5/AD0, 0x0) = -1 2
                            stat64("/usr/lib/libmis.dylib\0", 0x7FF7B1C57AD0, 0x0)
                            stat64(_''/\system/Volumes/Preboot/Cryptexes/OS/usr/lib/libmis.dylib\0'', 0x7FF7B1C57A80,
0x0)
                            stat64("/usr/lib/libmis.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/Versions/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURawCounter.framework/A/GPURAwCounter.framework/A/GPURAwCounter.framework/A/GPURAwCounter.framework/A/GPURAwCounter.framework/A/GPURAwCounter.framewor
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/GPURawCounter.0", 0x7FF7B1C57A50, 0x0) = -12
RawCounter (0", 5xstem/Library/PrivateFrameworks/GPURawCounter.framework/Versions/A/GPU = -1 2
                            stat64("/usr/lib/swift/libswiftCoreAudio.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftCoreAudio.dylib\0'', and become a constant of the control of the con
                            stat64("/usr/lib/swift/libswiftCoreAudio.dylib\0", 0x7FF7B1C57AD0, 0x0)
                            stat64("/usr/lib/swift/libswiftCoreFoundation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                              = -1.2
```

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stat64("/usr/lib/swift/libswiftCoreFoundation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                              = -12
                          stat64 ("/usr/lib/swift/libswiftXPC.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftXPC.dylib\0'',
                          stat64("/usr/lib/swift/libswiftXPC.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                         = -12
                                                                                                                                                                                                                                                                                                                                   = -1 2
                          stat64("/usr/lib/swift/libswiftCoreImage.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70, 0x0) \label{eq:condition} $$ \frac{4("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftCoreImage.dylib\0", $$ \frac{1}{2} - 1 2$ $$ \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} \right) \left( \frac{1}{2} - \frac{1}{2} -
                          stat64("/usr/lib/swift/libswiftCoreImage.dylib\0", 0x7FF7B1C57AD0, 0x0)
                          stat64 ("/usr/lib/swift/libswiftIOKit.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                         = -12
stat64("/usr/lib/swift/libswiftIOKit.dylib\0", 0x7FF7B1C57AD0, 0x0)
", 0x7FF7B1C57AD0, 0x0) = -1 2 rangeworks/TrialProto.framework/Versions/A/TrialProto\0
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/TrialProto.", 0x/FF/BIC5/A50, 0x0) = -12
", 0x7FF7B1C57AD0, 0x0) = -1 2 raneworks/TrialProto.framework/Versions/A/TrialProto\0
0x7FF7B1C57AD0, 0x0 Library/PrivateFrameworks/Trial.framework/Versions/A/Trial\0", = -12
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Trial.fr
amework/Versions/A/Trial\0", 0x7FF7B1C57A60, 0x0) = -1 2
0x7FF7B1C57AD0, 0x0) E-12 Trial-Grameworks/Trial.framework/Versions/A/Trial-O'',
                          stat64 ("/usr/lib/libbootpolicy.dylib \0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80, 0x0) Volumes/Prepoot/Cryptexes/OS/usr/lib/libbootpolicy.dylib\0'', = -1.2
                          stat64("/usr/lib/libbootpolicy.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FeedbackLogger.0", 0x7FF7B1C57A50, 0x0) = -12
\begin{array}{l} stat64("/System/Library/PrivateFrameworks/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/Versions/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/FeedbackLogger.framework/A/Feedback
                          stat64("/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57A80, 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsimd.dylib\0", 0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/lib/swift/libswift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/lib/swift/li
                          stat64("/usr/lib/swift/libswiftsimd.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/CaptiveNetwork.framework/Versions/A/CaptiveNetwork(0", 0x/FF/BIC5/AD0, 0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Lihrary/PrivateFrameworks/CaptiveNetwork\", 0x7FF7B1C57A50, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/CaptiveNetwork.framework/Versions/A/CaptiveNetwork(0",0x7FF7BIC57AD0,0x0) = -1.2
                          stat64("/usr/lib/libncurses.5.4.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80, 0x0) volumes/Preboot/Cryptexes/OS/usr/lib/libncurses.5.4.dylib\0",
                          stat64 ("/usr/lib/libncurses.5.4. dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/IOAccelMemoryInfo.framework/Versions/A/IOAccelMemoryInfo\0", 0x7FF7BIC57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/IOAccelMemoryInfo.framework/Versions/A/IOAccelMemoryInfo.0", 0x/FF/BIC5/A40, 0x0) = -12
stat64("/System/Library/PrivateFrameworks/IOAccelMemoryInfo.framework/Versions/A/IOAccelMemoryInfo\0", 0x7FF7BIC57AD0, 0x0) = -1 2
0x7FF7B1C57AD0,0x0\} = -12
```

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stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/AOSKit.framework/Versions/A/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.frameworks/AOSKit.framewo
0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} talk ("/System/Library/PrivateFrameworks/AOSKit.framework/Versions/A/AOSKit\0", 0x7FF7B1C57AD0, 0x0) \end{tabular}
stat64("/System/Library/PrivateFrameworks/SiriInstrumentation.framework/Versions/A/SiriInstrumentation\0", 0x/FF/BIC5/AD0, 0x0) = -1 2
stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/SiriInstrumentation.framework/Versions/A/SiriInstrumentation(0", 0x7FF7B1C57A40, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/SiriInstrumentation.framework/Versions/A/SiriInstrumentation\0", 0x/FF/BIC5/AD0, 0x0) = -1 2
stat64("/System/Library/Frameworks/Accelerate.framework/Versions/A/Frameworks/vImag
e.framework/Versions/A/Libraries/libCGInterfaces.dylib\0", 0x7FF7B1C57AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/Frameworks/Accelerate framework/Yersions/A/Erameworks/vimage.framework/Versions/A/Libraries/libCGInterfaces.dylib\0", 0x7FF/B1C5/A20, 0x0) \equiv -1 2
stat64("/System/Library/Frameworks/Accelerate.framework/Versions/A/Frameworks/vImag
e.framework/Versions/A/Libraries/libCGInterfaces.dylib\0", 0x/FF7B1C5/AD0, 0x0) = -1 2
                                       stat64("/usr/lib/swift/libswiftCoreLocation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               = -12
0x7FF7B1C57A70,0x0) = -1.2 0x7FF7B1C57A70,0x0) = -1.2
                                       stat64("/usr/lib/swift/libswiftCoreLocation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               = -12
                                       stat64("/usr/lib/swift/libswiftCoreMIDI.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A/0,0x0) \label{eq:condition} \\ \text{System/Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftCoreMIDI.dylib\0'',} \\ \text{System/Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift/libswift
                                       stat64("/usr/lib/swift/libswiftCoreMIDI.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/MSUDataAccessor.framework/Versions/A/MSUDataAccessor\", 0x/FF/BIC5/AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/MSUDataAccessor/0", 0x7FF7B1C57A40, 0x0) = -12
stat64("/System/Library/PrivateFrameworks/MSUDataAccessor.framework/Versions/A/MSUDataAccessor\0", 0x/FF7BIC57AD0, 0x0) = -1 2
ons/A/SoftwareUpdateCoreSupport\0'', 0x7FF/B1C5/AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SoftwareUpdateCoreSupport.framework/Versions/A/SoftwareUpdateCoreSupport\0", 0x7FF7B1C57A30,
stat64("/System/Library/PrivateFrameworks/SoftwareUpdateCoreSupport.framework/Versions/A/SoftwareUpdateCoreSupport\0", 0x7FF7B1C57AD0, 0x0)
                                       stat64("/usr/lib/libtailspin.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                                                                                                                                                                                             = -12
0x7FF7B1C57A80, 0x0) \begin{tabular}{l} & & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & 
                                       stat64("/usr/lib/libtailspin.dylib\0", 0x7FF7B1C57AD0, 0x0)
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stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/AttributeGraph.framework/Versions/A/AttributeGraph.0", 0x/FF/BIC5/A50, 0x0) = -12
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stat64("/System/Library/PrivateFrameworks/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/Versions/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A/TextRecognition.framework/A
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stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Futhark.b", 0x7FF/BIC57A50, 0x0) = -1 2
0x7FF7B1C57AD0, 0x0 stat64(''/System/Library/PrivateFrameworks/Futhark.framework/Versions/A/Futhark\0'', = -1 2
stat64("/System/Library/PrivateFrameworks/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/Versions/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/BiomeFoundation.framework/A/
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/BiomeFoundation(0",0x7FF/BIC5/A40,0x0) = -1 \ 2
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\0", 0x7FF/B1C5/AD0, 0x0) = -12
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Inertia Cam.framework/Versions/A/InertiaCam(0",0x7FF/BIC57A50,0x0)" = -1 2
\0", 0x7FF/B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/InertiaCam.framework/Versions/A/InertiaCam
                                     stat64("/usr/lib/swift/libswiftMetal.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) = -12 Preboot/Cryptexes/OS/usr/lib/swift/libswiftMetal.dylib\0'', and a substitute of the control of the
                                     stat64("/usr/lib/swift/libswiftMetal.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                     stat64("/usr/lib/swift/libswiftCompression.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/usr/lib/swift/libswiftCompression.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} table & tabl
stat64("/System/Volumes/Preboot/Cryntexes/QS/System/Library/PrivateFrameworks/FTAWD\0", 0x7FF/B1C5/A60, 0x0) = -12
0x7FF7B1C57AD0, 0x0} Library/PrivateFrameworks/FTAWD.framework/Versions/A/FTAWD\0",
                                     stat64("/usr/lib/libFDR.dylib\0", 0x7FF7B1C57AD0, 0x0)
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0x0)
                                     stat64("/usr/lib/libFDR.dylib\0", 0x7FF7B1C57AD0, 0x0)
stat64("/System/Library/PrivateFrameworks/BiomeStreams.framework/Versions/A/BiomeStreams\0", 0x7FF7BIC57AD0, 0x0) = -1.2
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stat64("/System/Library/PrivateFrameworks/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams.framework/Versions/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/BiomeStreams/A/
ons/A/SoftwareUpdateCoreConnect\0', 0x/FF/B1C5/ADU, 0x0) = -12
\begin{array}{l} stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SoftwareUpdateCoreConnect(0", 0x/FF7B1C57A30, 0x/FF7B1C57
ons/A/SoftwareUpdateCoreConnect\0', 0x/FF/B1C5/ADU, 0x0)
cs\0", stat64("/System/Library/PrivateFrameworks/OSAnalytics.framework/Versions/A/OSAnalytics/Table 5/AD0, 0x0) = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/OSAnalytics.framework/Versions/A/OSAnalytics\0", 0x7FF7B1C57A50, 0x0) = -1 2
cs\0", stat64("/System/Library/PrivateFrameworks/OSAnalytics.framework/Versions/A/OSAnalyti = -1 2
stat64("/System/Library/PrixateFrameworks/NetworkServiceProxy.framework/Versions/A/N etworkServiceProxy\0", 0x7FF/B1C5/AD0, 0x0) = -1 2
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                                     stat64("/usr/lib/swift/libswiftQuartzCore.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70,0x0) Preboot/Cryptexes/OS/usr/lib/swift/libswiftQuartzCore.dylib\0'',
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= -12
                                     stat64("/usr/lib/swift/libswiftQuartzCore.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57AD0,0x0) \label{eq:constant} PrivateFrameworks/kperf.framework/Versions/A/kperf\0'', and a substitution of the constant of the co
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0x7FF7B1C57AD0, 0x0) \label{eq:constant} PrivateFrameworks/kperf.framework/Versions/A/kperf\0'', \\ = -1.2
0x7FF7B1C57AD0, 0x0) = -1.2 \\ \text{The state of the state 
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/ktrace.framework/Versions/A/ktrace\0", 0x7FF7B1C57A60, 0x0)
MobileSystemServices\0", 0x7FF/BIC57AD0, 0x0) stat64("/System/Library/PrivateErameworks/MobileSystemServices.framework/Versions/A/
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Mobile SystemServices.", 0x7FF7B1C57A40, 0x0) =
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stat64("/System/Library/PrivateFrameworks/SignpostSupport.framework/Versions/A/SignpostSupport.o", 0x/FF/BIC5/AD0, 0x0) = -12
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/SignpostSupport.framework/Versions/A/SignpostSupport\0", 0x7FF7B1C57A40, 0x0) = -12
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stat64("/System/Library/PrivateFrameworks/SampleAnalysis.framework/Versions/A/SampleAnalysis\0", 0x7FF/B1C57AD0, 0x0) = -12
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                                      stat64("/usr/lib/libamsupport.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/libamsupport.dylib \ 0", and becomes the control of the control of
                                     stat64("/usr/lib/libamsupport.dylib\0", 0x7FF7B1C57AD0, 0x0)
bSub\backslash 0 \text{ ", 0x7FF/BIC5/AD0, 0x0)} = -12
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Biome
PubSub.framework/Versions/A/BiomePubSub\0", 0x7FF7BIC57A50, 0x0) = -12
bSub \setminus 0 \text{ ", } 0x7FF7BIC57AD0, \\ 0x0)
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stat64("/System/Library/PrivateFrameworks/DeviceIdentity.framework/Versions/A/DeviceIdentity.0", 0x/FF7B1C57AD0, 0x0) = -12
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/DeviceI dentity/0", 0x7FF/BIC5/A50, 0x0) = -12
entity\0", 0x/FF7B1C57AD0, 0x0) = -12
ptomReporter\(\frac{1}{0}\), \(\frac{1}{0}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PriyateFrameworks/SymptomReporter.framework/Versions/A/SymptomReporter(0", 0x7FF7B1C57A40, 0x0) = -1 2
ptomReporter\(\frac{1}{0}\), \(\frac{1}{0}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1}\), \(\frac{1
                                    stat64 ("/usr/lib/swift/libswiftUniformTypeIdentifiers.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0|)
dylib \\ \downarrow 0 \\ , 0x7 \\ FF/B1C5/A70, 0x0) \\ Preboot/Cryptexes/OS/usr/lib/swift/libswiftUniformTypeIdentifiers. \\
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= -1\ 2 \quad stat64 ("/usr/lib/swift/libswiftUniformTypeIdentifiers.dylib\0", 0x7FF7B1C57AD0, 0x0)
                   stat64 ("/usr/lib/swift/libswiftAccelerate.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0) \\
0x7FF7B1C57A70, 0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftAccelerate.dylib\0'',
                   stat64("/usr/lib/swift/libswiftAccelerate.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                        = -12
                   stat64 ("/usr/lib/libpartition2\_dynamic.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
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0x7FF7B1C57A80, 0x0) \label{eq:condition2} Stat64(''/System/Volumes/Prepoot/Cryptexes/OS/usr/lib/libpartition2_dynamic.dylib\0'', = -1.2 \label{eq:condition2}
                   stat64("/usr/lib/libpartition2_dynamic.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/AFKUser.framework/Versions/A/AFKUser \ 0", 0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/AFKUser.framework/Versions/A/AFKUser \ 0", 0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/AFKUser.framework/Versions/A/AFKUser \ 0", 0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/AFKUser.framework/Versions/A/AFKUser \ 0", 0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.frameworks/AFKUser.
stat64 ("/System/Yolumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/AFKUser(0", 0x7FF/B1C57A50, 0x0) = -1.2
0x7FF7B1C57AD0,0x0) \begin{tabular}{l} Library/PrivateFrameworks/AFKUser.framework/Versions/A/AFKUser\0", & 1.2 \\ \hline \end{tabular}
stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Osprey.framework/Versions/A/Osprey\0", 0x/FF7BFC5/A60, 0x0)
0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} talk (1') System/Library/PrivateFrameworks/Osprey. framework/Versions/A/Osprey. 0'', and all talk (1') System/Library/PrivateFrameworks/Osprey. framework/Versions/A/Osprey. 0'', and all talk (1') System/Library/PrivateFrameworks/Osprey. framework/Versions/A/Osprey. 0'', and all talk (1') System/Library/PrivateFrameworks/Osprey. framework/Versions/A/Osprey. 0''', and all talk (1'') System/Library/PrivateFrameworks/Osprey. 1''' System/Lib
                   stat64("/usr/lib/swift/libswiftCryptoTokenKit.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                  = -12
", 0x7FF/B1C57A/0,0x0" volumes/Preboqt/Cryptexes/OS/usr/lib/swift/libswiftCryptoTokenKit.dylib\0 ", 0x7FF/B1C57A/0,0x0"
                   stat64("/usr/lib/swift/libswiftCryptoTokenKit.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                  = -12
                   stat64("/usr/lib/swift/libswiftCoreMedia.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                               = -12
ox7FF7B1C57A70, 0x0) \label{eq:condition} stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftCoreMedia.dylib\0", = -1 2 \label{eq:condition}
                   stat64 ("/usr/lib/swift/libswiftCoreMedia.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57AD0, 0x0) = -12
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/kperfdata/0", 0x7FF/B1C5/A50, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/BulkSymbolication.framework/Versions/A/BulkSymbolication\", 0x/FF/BIC5/AD0, 0x0) = -1 2
stat64("/System/Xolumes/Preboot/Cryptexes/OS/System/Library/PriyateFrameworks/BulkSymbolication(0", 0x7FF7BIC57A40, 0x0)" = -1 2
stat64("/System/Library/PrivateFrameworks/BulkSymbolication.framework/Versions/A/BulkSymbolication\0", 0x/FF7BIC57AD0, 0x0) = -1 2
                   stat64("/usr/lib/swift/libswiftOSLog.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) \label{eq:continuous} Preboot/Cryptexes/OS/usr/lib/swift/libswiftOSLog.dylib \ ", on the continuous of the continuou
                   stat64("/usr/lib/swift/libswiftOSLog.dylib\0", 0x7FF7B1C57AD0, 0x0)
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                                                                                                                                                                                                                                                                = -12
0x7FF7B1C57A/0,0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftAVFoundation.dylib\0",
                   stat64("/usr/lib/swift/libswiftAVFoundation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                                                                                                                                                = -12
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0x7FF7B1C57AD0, 0x0 Library/PrivateFrameworks/Netrb.framework/Versions/A/Netrb\0",
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0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} Library/PrivateFrameworks/Netrb.framework/Versions/A/Netrb\0'', \\ = -1.2 \end{tabular}
0x7FF7B1C57AD0,0x0) = -1.2 stat64("/System/Library/Frameworks/OSLog.framework/Versions/A/OSLog\0",
work/Versions/A/OSLog\0", 0x/FF/B1C5/A60, 0x0) = -1 2
0x7FF7B1C57AD0,0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/InternalSwiftProtobuf.framework/Versions/A/InternalSwiftProtobuf.0", 0x/FF/B1C5/AD0, 0x0) = -1.2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/InternalSwiftProtobuf(0", 0x7FF7B1C57A40, 0x0)" = -1
stat64("/System/Library/PrivateFrameworks/InternalSwiftProtobuf.framework/Versions/A/InternalSwiftProtobuf\0", 0x7FF7B1C57AD0, 0x0) = -1 2
y\0", 0x/FF/B1C5/AD0, 0x0) rivateFrameworks/HIDDisplay.framework/Versions/A/HIDDisplay = -1 2
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0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} tatto & tatt
                    stat64("/usr/lib/libedit.3.dylib\0", 0x7FF7B1C57AD0, 0x0)
                    stat6 \underline{\underline{4}}(\underline{\underline{1}}/\underline{\underline{2}}ystem/Volumes/Preboot/Cryptexes/OS/usr/lib/libedit.3.dylib \verb|\|0", 0x7FF7B1C57A80, |
0x0)
                    stat64("/usr/lib/libedit.3.dylib\0", 0x7FF7B1C57AD0, 0x0)
ags\0", stat64("/System/Library/PrivateFrameworks/FeatureFlags.framework/Versions/A/FeatureFl
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ags\backslash 0", stat64("/System/Library/PrivateFrameworks/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framework/Versions/A/FeatureFlags.framewor
                    stat64("/usr/lib/swift/libswiftNaturalLanguage.dylib\0", 0x7FF7B1C57AD0, 0x0)
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eerToPeer\0", 0x7FF7B1C57AD0, 0x0) = -1 2
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stat64("/System/Library/PrivateFrameworks/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper\0", 0x/FF/BIC5/AD0, 0x0)
stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/ConfigProfileHelper(0", 0x7FF7B1C57A40, 0x0) = -1.2
stat64("/System/Library/PrivateFrameworks/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/Versions/A/ConfigProfileHelper.framework/A/ConfigProfileHelper.framework/A/ConfigProfileHelper.framework/A/ConfigProfileHelper.framework/A/ConfigProfileHelper.framework
mpiler\0", 0x7FF7B1C57AD0, 0x0\" = -1 2
stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/ANEC ompiler.framework/Versions/A/ANECompiler\0", 0x/FF/B1C5/A50, 0x0) = -1 2
stat64("/System/Library/PrivateFrameworks/ANECompiler.framework/Versions/A/ANECompiler\0", 0x7FF7B1C57AD0, 0x0\"= -1 2
stat64("/System/Library/Frameworks/OpenGL.framework/Versions/A/Libraries/libCoreFSC ache.dylib\0", 0x7FF/B1C57AD0, 0x0) = 12
stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/Frameworks/OpenGL.framework/Versions/A/Libraries/libCorefSCache.dylib\0", 0x7FF7BIC57A40, 0x0)
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PEGXL.framework/Versions/A/AppleJPEGXL\0'', 0x/FF/BIC5/A50, 0x0) = -1 2 PEGXL'0", 0x/FF/B1C5/AD0, 0x0) = -1 2 eyStore\0'',\0x7FF7BIC57AD0,\0x0\) stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Apple KeyStore.framework/Versions/A/AppleKeyStore\0", 0x7FF7B1C57A50, 0x0) = -12 eyStore\0'',\0x7FF7BIC57AD0,\0x0\) stat64("/System/Library/PrivateFrameworks/AppleMobileFileIntegrity.framework/Versions/A/AppleMobileFileIntegrity\0", 0x7FF7BIC57AD0, 0x0) stat64("/System/Library/PrivateFrameworks/AppleMobileFileIntegrity.framework/Versions/A/AppleMobileFileIntegrity\0", 0x7FF/BIC5/AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/AtomicsInternal.framework/Versions/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.frame stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Atomic sInternal.framework/Versions/A/AtomicsInternal.0", 0x/FF/B1C5/A40, 0x0) = -1.2stat64("/System/Library/PrivateFrameworks/AtomicsInternal.framework/Versions/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInternal.framework/A/AtomicsInte nalytics\0",0x7FF7BIC57AD0,0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Audio Analytics.framework/Versions/A/AudioAnalytics\0", 0x7FF/BIC57A50, 0x0) = -12 stat64("/System/Library/PrivateFrameworks/AudioAnalytics.framework/Versions/A/AudioAnalytics.framework/Versions/A/AudioA ", 0x7FF7B1C57AD0, 0x0) = -I 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Biome DSL\0", 0x7FF7B1C57A50, 0x0) = -12 ", 0x7FF7B1C57AD0, 0x0) Library/PrivateFrameworks/BiomeDSL.framework/Versions/A/BiomeDSL\0 = -I 2 iomeFlexibleStorage (U')System/Library/PrivateFrameworks/BiomeFlexibleStorage (Bramework/Versions/A/B) = -1.2stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Biome FlexibleStorage.framework/Versions/A/BiomeFlexibleStorage\0", 0x7FF7BIC57A40, 0x0) = -1 iomeFlexibleStorage ("/System/Library/PrivateFrameworks/BiomeFlexibleStorage (", 0x/FF/BICS/AD0, 0x0)" = -1.2brary\0", 0x/FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/BiomeLibrary\0", 0x/FF/BIC5/A50, 0x0) = -I 2 stat64("/System/Library/PrivateFrameworks/BiomeLibrary.framework/Versions/A/BiomeLibrary.framework/A/BiomeLibrary.framew $0", 0x7FF7B1C57AD0, 0x0) \\ = -12$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/BiomeSync.framework/Versions/A/BiomeSync.0", 0x7FF/B1C57A50, 0x0) = -1 2 g\0'', 0x/FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/CMImaging.framework/Versions/A/CMImaging. stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CMImaging.0", 0x7FF/B1C5/A50, 0x0)"=-12 $0x7FF7B1C57AD0,0x0) \label{eq:constant} PrivateFrameworks/CMPhoto.framework/Versions/A/CMPhoto\0'', and the constant of the$ $stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/CMPhoto\0", 0x7FF/B1C5/A50, 0x0) = -1.2$ $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/CMPhoto.framework/Versions/A/CMPhoto\0'', and both the control of the control$

stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CascadeSets.0", 0x7FF7B1C57A50, 0x0) = -1 2 $ts \ 0", \ 0x/FF/BIC5/AD0, \ 0x0)'' = -12$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Cloud Assets.framework/Versions/A/CloudAssets\0", 0x7FF7B1C57A50, 0x0) stat64("/System/Library/PrivateFrameworks/CollectionsInternal.framework/Versions/A/Collections/A/Collection stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CollectionsInternal.framework/Versions/A/CollectionsInternal\0", 0x/FF7BIC57A40, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/CollectionsInternal.framework/Versions/A/Collections/A/Collectstat64("/System/Library/PrivateFrameworks/CoreSceneUnderstanding.framework/Versions/A/CoreSceneUnderstanding\0", 0x7FF7BIC57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CoreSceneUnderstanding.framework/Versions/A/CoreSceneUnderstanding(0", 0x7FF7B1C57A40, 0x0) stat64("/System/Library/PrivateFrameworks/CoreSceneUnderstanding.framework/Versions/A/CoreSceneUnderstanding.", 0x/FF/BIC5/AD0, 0x0)stat64("/System/Library/PrivateFrameworks/CoreUtilsExtras.framework/Versions/A/CoreUtilsExtras.framework/Versions/A/CoreUt stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/CoreUtilsExtras\0", 0x7FF7B1C57A40, 0x0) = -12 stat64("/System/Library/PrivateFrameworks/CoreUtilsExtras.framework/Versions/A/CoreUtilsExtras.framework/Versions/A/CoreUt oKitPrivate()"/System/Library/PrivateFrameworks/CryptoKitPrivate.framework/Versions/A/Crypt stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/CryptoKitPrivate(0", 0x/FF/BIC5/A40, 0x0) = -12 oKitPrivate(", System/Library/PrivateFrameworks/CryptoKitPrivate.framework/Versions/A/Crypt = -1.2 , 0x7FF'B1C57AD0, 0x0) Library/PrivateFrameworks/Darwinup.framework/Versions/A/Darwinup\0" stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/Darwin up.framework/Versions/A/Darwin up.framework/Versions/A/Darwin up.framework/Versions/A/Darwin up.frameworks/Darwin up.frameworks/Da $0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} Library/PrivateFrameworks/Dendrite.framework/Versions/A/Dendrite\0'', and begin{tabular}{l} Library/PrivateFrameworks/Dendrite.framework/Versions/A/Dendrite\0'', and begin{tabular}{l} Library/PrivateFrameworks/Dendrite.framework/Versions/A/Dendrite\0'', and begin{tabular}{l} Library/PrivateFrameworks/Dendrite.framework/Versions/A/Dendrite\0'', and begin{tabular}{l} Library/PrivateFrameworks/Dendrite.f$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Dendrite.framework/Versions/A/Dendrite\0", 0x7FF/BIC57A50; 0x0) = -12 ces\0", 0x/FF/BFC5/AD0, 0x0/PrivateFrameworks/FontServices.framework/Versions/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework/A/FontServices.framework stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FontServices.framework/Versions/A/FontServices\0", 0x7FF7B1C57A50, 0x0) = -1 2 ces\0", stat64("/System/Library/PrivateFrameworks/FontServices.framework/Versions/A/FontServices\0", 0x7FF7BIC57AD0, 0x0) stat64("/System/Library/PrivateFrameworks/FontServices.framework/libXTFontStaticRegistryData.dylib\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/FontServices.framework/libXTFontStaticRegistryData.dylib\0",0x7FF/BIC5/A40,0x0) = -12 stat64("/System/Library/PrivateFrameworks/FontServices.framework/libXTFontStaticRegistryData.dylib\0", 0x7FF7B1C57AD0, 0x0) = -1 2 ing\0", stat64("/System/Library/PrivateFrameworks/FramePacing.framework/Versions/A/FramePacing\0", 0x7FF7B1C57AD0, 0x0) $\label{eq:continuity} Pacing. It at 64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Frame Pacing.", 0x7FF7B1C57A50, 0x0) = -12$

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-12stat64("/System/Library/PrivateFrameworks/GenerativeModels.framework/Versions/A/GenerativeModels/Versions/A/GenerativeModels/A/GenerativeModels/Versions/A/GenerativeModels/A/Gstat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Genera tiveModels.framework/Versions/A/GenerativeModels\0", 0x7FF7B1C57A40, 0x0) = -1 2 stat64 ("/System/Library/PrivateFrameworks/GenerativeModels.framework/Versions/A/GenerativeModels/A/Generastat64("/System/Library/PrivateFrameworks/GenerativeModelsFoundation.framework/Versions/A/GenerativeModelsFoundation\0", 0x7FF/B1C5/AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/GenerativeModelsFoundation\0", 0x7FF7B1C57A30, 0x0) ons/A/GenerativeModelsFoundation/U", 0x7FF/BIC5/ADU, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/GeoServicesCore.framework/Versions/A/GeoServicesCore\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/GeoServicesCore\0", 0x7FF7B1C57A40, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/GeoServicesCore.framework/Versions/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.framework/A/GeoServicesCore.frame $0x7FF7B1C57AD0, 0x0) \begin{tabular}{l} &\texttt{E}-12 &\texttt{E} &\texttt{$ stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/IO8021 1.framework/Versions/A/IO80211\0", 0x7FF/BIC5/A50, 0x0) = -1 2 0x7FF7B1C57AD0, 0x0) = -1.2

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(0°, 0x/FF/BIC5/AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/IsolatedCoreAudioClient.framework/Versions/A/IsolatedCoreAudioClient\0", 0x7FF7B1C57AD0, 0x0) = -12 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Isolate dCoreAudioClient.framework/Versions/A/IsolatedCoreAudioClient\0", 0x7FF7B1C57A30, 0x0) stat64("/System/Library/PrivateFrameworks/IsolatedCoreAudioClient.framework/Versions/A/IsolatedCoreAudioClient\0", 0x7FF7B1C57AD0, 0x0) = -12 stat64("/System/Library/PrivateFrameworks/LocalAuthenticationCore.framework/Versions/A/LocalAuthenticationCore\0", 0x7FF/BIC5/AD0, 0x0) = -1 2 .stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/LocalAuthenticationCore\0", 0x7FF7B1C57A30, 0x0) stat64("/System/Library/PrivateFrameworks/LocalAuthenticationCore.framework/Versions/A/LocalAuthenticationCore\0", 0x7FF7B1C57AD0, 0x0\" = -1 2 $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/MIL.framework/Versions/A/MIL \ 0",$ stat64("!/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/MIL.fr amework/Versions/A/MIL\0", 0x7FF7B1C57A60, 0x0) = -12 $0x7FF7B1C57AD0,0x0) Library/PrivateFrameworks/MIL.framework/Versions/A/MIL \ ", 12 model of the control of th$ \0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/MLAssetIO.framework/Versions/A/MLAssetIO stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/MLAssetIO\0", 0x7FF/BIC57A50, 0x0) = -1 2 \0", 0x7FF/B1C5/AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/MLAssetIO.framework/Versions/A/MLAssetIO stat64("/System/Library/PrivateFrameworks/MLCompilerRuntime.framework/Versions/A/MLCompilerRuntime(0", 0x/FF7B1C57AD0, 0x0) = -1 2 stat64 ("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/MLCompilerRuntime.ltramework/Versions/A/MLCompilerRuntime(0", 0x7FF7B1C57A40, 0x0) = -1stat64("/System/Library/PrivateFrameworks/MLCompilerRuntime.framework/Versions/A/MLCompilerRuntime\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/MLCompilerServices.framework/Versions/A/MLCompilerServices\0", 0x/FF/B1C5/AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/QS/System/Library/PrivateFrameworks/MLCompilerServices(0", 0x7FF/B1C5/A40, 0x0)"=stat64("/System/Library/PrivateFrameworks/MLCompilerServices.framework/Versions/A/M LCompilerServices\0", 0x/FF/B1C5/AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/MessageSecurity.framework/Versions/A/MessageSecurity\0", 0x7FF7BIC57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/MessageSecurity.0", 0x7FF7BIC57A40, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/MessageSecurity.framework/Versions/A/MessageSecurity\0", 0x7FF7B1C57AD0, 0x0) = -1 2

stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/ModelCatalog\0", 0x7FF7B1C57A50, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/ModelManagerServices.framework/Versions/A/ModelManagerServices\0", 0x7FF7BIC57AD0, 0x0) = -F2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Model ManagerServices.framework/Versions/A/ModelManagerServices\0", 0x7FF7B1C57A40, 0x0) stat64("/System/Library/PrivateFrameworks/ModelManagerServices.framework/Versions/A/ModelManagerServices\0", 0x7FF7BIC57AD0, 0x0) = -F2 stat64("/System/Library/PrivateFrameworks/ParsingInternal.framework/Versions/A/ParsingInternal.framework/Versions/A/Parsing stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Lihrary/PriyateFrameworks/ParsingInternal.framework/Versions/A/ParsingInternal\0", 0x7FF7B1C57A40, 0x0) = -1 2 stat64("/System/Library/PrixateFrameworks/ParsingInternal.framework/Versions/A/ParsingInternal.framework/Versions/A/Parsing 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stat64("'/System/Library/PrivateFrameworks/RuntimeInternal.framework/Versions/A/Runti stat64("/System/Library/PrivateFrameworks/SensitiveContentAnalysisML.framework/Versions/A/SensitiveContentAnalysisML\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryntexes/OS/System/Library/PrivateFrameworks/SensitiveContentAnalysisML\0", 0x/FF/B1C57A30, ons/A/SensitiveContentAnalysisML\frameworks/SensitiveContentAnalysisML.framework/Versi = -1 2 stat64("/System/Library/PrivateFrameworks/SentencePieceInternal.framework/Versions/A/SentencePieceInternal.0", 0x7FF/B1C5/AD0, 0x0) = -1.2stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SentencePieceInternal.framework/Versions/A/SentencePieceInternal.framework/V stat64("/System/Library/PrivateFrameworks/SentencePieceInternal.framework/Versions/A/SentencePieceInternal\0", 0x7FF7B1C57AD0, 0x0) = -1 2 ics\0", stat64("/System/Library/PrivateFrameworks/SiriAnalytics.framework/Versions/A/SiriAnalyt stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriAnalytics\0", 0x7FF7BIC57A50, 0x0) = -1 2 ics\0", $\frac{5tat64("')System/Library/PrivateFrameworks/SiriAnalytics.framework/Versions/A/SiriAnalytics\0", 0x/FF7B1C57AD0, 0x0)$ stat64("/System/Library/PrivateFrameworks/SiriCrossDeviceArbitration.framework/Version s/A/SiriCrossDeviceArbitration(0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Prehoot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriCrossDeviceArbitration.framework/Versions/A/SiriCrossDeviceArbitration(0", 0x7FF7BIC57A30, 0x0) stat64("/System/Library/PrivateFrameworks/SiriCrossDeviceArbitration.framework/Version = -1 2 . stat64 ("/System/Library/PrivateFrameworks/SiriCrossDeviceArbitrationFeedback.frameworks/SiriCrossDeviceArbitrstat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriCrossDeviceArbitrationFeedback.framework/Versions/A/SiriCrossDeviceArbitrationFeedback\0", = -1 2 . stat64 ("/System/Library/PrivateFrameworks/SiriCrossDeviceArbitrationFeedback.frameworks/SiriCrossDeviceArbitrstat64("/System/Library/PrivateFrameworks/SiriPowerInstrumentation.framework/Versions/A/SiriPowerInstrumentation\0", 0x7FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriPowerInstrumentation.framework/Versions/A/SiriPowerInstrumentation\0", 0x7FF7BIC57A30, 0x0 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriTT S.0", 0x/FF/BIC5/A50, 0x0) = -1 2 ox7FF7B1C57AD0, 0x0) = -1.2Service\0", 0x7FF7BIC57AD0, 0x0\\ = -12 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/SiriTTService\0", 0x/FF/BIC5/A50; 0x0) Service\0", 0x7FF7BIC57AD0, 0x0) $stat64 ("/System/Library/PrivateFrameworks/\underline{\underline{S}} treamingExtractor. framework/Versions/A/StreamingExtractor. 0", 0x7FF7B1C57AD0, 0x0)$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/StreamingExtractor.framework/Versions/A/StreamingExtractor\0", 0x7FF7B1C57A40, 0x0) = -1 2 $stat64 ("/System/Library/PrivateFrameworks/\underline{StreamingExtractor.framework/Versions/A/StreamingExtractor.0", 0x7FF7B1C57AD0, 0x0)$ stat64("/System/Library/PrivateFrameworks/Symptoms framework/Yersions/A/Frameworks SymptomAnalytics.framework/Versions/A/SymptomAnalytics\0", 0x7FF7B1C57AD0, 0x0) stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Symptoms, framework/Versions/A/Frameworks/SymptomAnalytics.framework/Versions/A/SymptomAnalytics.framework

stat64("/System/Library/PrivateFrameworks/Symptoms framework/Yersions/A/Frameworks SymptomAnalytics.framework/Versions/A/SymptomAnalytics\0", 0x/FF/BIC57AD0, 0x0) stat64 ("/System/Library/PrivateErameworks/TailspinSymbolication.framework/Versions/A/TailspinSymbolication.", 0x/FF/B1C5/AD0, 0x0) = -1.2 $\label{eq:state-state-state-state} state-4 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/TailspinSymbolication.", 0x7FF7B1C57A40, 0x0) = -1$ stat64 ("/System/Library/Private Frameworks/Tailspin Symbolication.framework/Versions/A/Tailspin Symbolication.", 0x7FF/B1C57AD0, 0x0) = -1 2", 0x7FF7BIC57AD0, 0x0Library/PrivateFrameworks/Tightbeam.framework/Versions/A/Tightbeam\0 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Tightbeam\0", 0x/FF/BIC5/A50, 0x0) = -12 ", 0x7FF7B1C57AD0, 0x0) Library/PrivateFrameworks/Tightbeam.framework/Versions/A/Tightbeam\0 stat64("/System/Library/PrivateFrameworks/TokenGeneration.framework/Versions/A/TokenGeneration\0", 0x7FF7BIC57AD0, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Token Generation.framework/Versions/A/TokenGeneration/0", 0x/FF/B1C5/A40, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/TokenGeneration.framework/Versions/A/TokenGeneration\0", 0x7FF/BIC5/AD0, 0x0) = -1 2 stat64(":/System/Library/PrivateErameworks/TokenGenerationCore.framework/Versions/A/TokenGenerationCore.framework/Versions/A/Ore.framework/Versions/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/Toke stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Token_enerationCore\0", 0x7FF7BIC57A40, 0x0) = stat64(":/System/Library/PrivateErameworks/TokenGenerationCore.framework/Versions/A/TokenGenerationCore.framework/Versions/A/Ore.framework/Versions/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/TokenGenerationCore.framework/A/Toke $stat64("/System/Library/PrivateFrameworks/UnifiedAssetFramework.framework/Versions/A/UnifiedAssetFramework\0",0x7FF7B1C57AD0,0x0) = -12$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Unified AssetFramework:framework/Versions/A/UnifiedAssetFramework\0", 0x7FF/BIC5/A40, 0x0)stat64("/System/Library/PrivateFrameworks/UnifiedAssetFramework.framework/Versions/A/UnifiedAssetFramework\0",0x7FF7BIC57AD0,0x0) = -I 2 rch\0", stat64("/System/Library/PrivateFrameworks/VectorSearch.framework/Versions/A/VectorSearch\0", 0x7FF7B1C57AD0, 0x0) = -12 stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/Vector Search.framework/Versions/A/VectorSearch.0", 0x/FF/BIC5/A50, 0x0) = -1 2 rch\0", stat64("/System/Library/PrivateFrameworks/VectorSearch.framework/Versions/A/VectorSearch\0", 0x/FF7B1C57AD0, 0x0) = -1 2 stat64("/System/Library/PrivateFrameworks/VideoToolboxParavirtualizationSupport.framework/Versions/A/VideoToolboxParavirtualizationSupport\0", 0x7FF7BIC57AD0, 0x0) = -12 $0", 0x7FF/B1C57AD0, 0x0) \\ = -1.2 \\ rameworks/VisionCore.framework/Versions/A/VisionCore \\ \label{eq:figure} \\ 0 \\ \label{eq$ stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/VisionCore.framework/Versions/A/VisionCore(0", 0x7FF/BIC57A50, 0x0)" = -12 $0", 0x7FF/B1C57AD0, 0x0) \\ = -1.2 \\ \text{The properties of the prop$ ort\0'', 0x7FF7BTC57AD0, 0x0) PrivateFrameworks/XPCSupport.framework/Versions/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPCSupport.framework/A/XPC stat64 ("/System/Volumes/Preboot/Cryptexes/OS/System/Library/PrivateFrameworks/XPCSupport(0", 0x/FF/B1C5/A50, 0x0)" = -1.2stat64("/usr/lib/libAXSafeCategoryBundle.dylib\0", 0x7FF7B1C57AD0, 0x0) $0x7FF7B1C57A70,0x0) \label{eq:conditional} Preboot/Cryptexes/OS/usr/lib/libAXSafeCategoryBundle.dylib \ ", on the condition of the condition$ = -12stat64("/usr/lib/libAXSafeCategoryBundle.dylib\0", 0x7FF7B1C57AD0, 0x0) stat64("/usr/lib/libAppleArchive.dylib\0", 0x7FF7B1C57AD0, 0x0)

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0x7FF7B1C57A80,0x0) \label{eq:continuous_prehoot_cryptexes_os_usr_lib_lib} Os_usr_lib_libAppleArchive.dylib_o",
           stat64("/usr/lib/libAppleArchive.dylib\0", 0x7FF7B1C57AD0, 0x0)
           stat64("/usr/lib/libCoreEntitlements.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                   = -12
stat64("/usr/lib/libCoreEntitlements.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                   = -12
           stat64("/usr/lib/libRosetta.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80, 0x0) = -1.2
           stat64("/usr/lib/libRosetta.dylib\0", 0x7FF7B1C57AD0, 0x0)
           stat64("/usr/lib/libTLE.dylib\0", 0x7FF7B1C57AD0, 0x0)
          stat64 ( ''/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libTLE.dylib\0'', 0x7FF7B1C57A80,
0x0)
           stat64("/usr/lib/libTLE.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                             = -12
           stat64("/usr/lib/libcrypto.46.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                      = -12
0x7FF7B1C57A80,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/libcrypto.46.dylib \ 0",
           stat64("/usr/lib/libcrypto.46.dylib\0", 0x7FF7B1C57AD0, 0x0)
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0x7FF7B1C57A80, 0x0) \begin{tabular}{l} System/Volumes/Preboot/Cryptexes/OS/usr/lib/libcupolicy.dylib\0", \\ = -1.2 \end{tabular}
           stat64("/usr/lib/libcupolicy.dylib\0", 0x7FF7B1C57AD0, 0x0)
           stat64("/usr/lib/libmrc.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                            = -12
           0x0)
           stat64("/usr/lib/libmrc.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                            = -12
           stat64("/usr/lib/libnwswifttls.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80, 0x0) \label{eq:continuous} Prepoot/Cryptexes/OS/usr/lib/libnwswifttls.dylib\0'', and the continuous of the continuous of
           stat64("/usr/lib/libnwswifttls.dylib\0", 0x7FF7B1C57AD0, 0x0)
           stat64 ("/usr/lib/libssl.48.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                  = -12
           stat6\underline{\underline{4}}(\underline{\underline{''/2}}ystem/Volumes/Preboot/Cryptexes/OS/usr/lib/libssl.48.dylib \verb|\|0",0x7FF7B1C57A80|,
0x0
           stat64("/usr/lib/libssl.48.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                  = -12
           stat64("/usr/lib/swift/libswiftDistributed.dylib\0", 0x7FF7B1C57AD0, 0x0)
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0x7FF7B1C57A70,0x0) Preboot/Cryptexes/OS/usr/lib/swift/libswiftDistributed.dylib \ 0",
           stat64("/usr/lib/swift/libswiftDistributed.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                           = -12
           stat64 ("/usr/lib/swift/libswiftFileProvider.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                            = -12
stat64("/usr/lib/swift/libswiftFileProvider.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                            = -12
           stat64 ("/usr/lib/swift/libswiftMLCompute.dylib \verb|\|0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70,0x0)^{Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftMLCompute.dylib\0",
           stat64("/usr/lib/swift/libswiftMLCompute.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                        = -12
           stat64("/usr/lib/swift/libswiftObservation.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70, 0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftObservation.dylib\0",
           stat64("/usr/lib/swift/libswiftObservation.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                             = -12
           stat64("/usr/lib/swift/libswiftRegexBuilder.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                              = -12
0x7FF7B1C57A70,0x0) = -1.2 \\ \text{Cryptexes/OS/usr/lib/swift/libswiftRegexBuilder.dylib\0''},
```

```
stat64("/usr/lib/swift/libswiftRegexBuilder.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                           = -12
          stat64("/usr/lib/swift/libswiftSynchronization.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                             = -12
stat64("/usr/lib/swift/libswiftSynchronization.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                            = -12
          stat64("/usr/lib/swift/libswiftSystem.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftSystem.dylib\0",
          stat64("/usr/lib/swift/libswiftSystem.dylib\0", 0x7FF7B1C57AD0, 0x0)
          stat64("/usr/lib/swift/libswift_Builtin_float.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                         = -12
0x7FF7B1C57A70,0x0) Volumes/Prepoot/Cryptexes/OS/usr/lib/swift/libswift_Builtin_float.dylib\0",
          stat64("/usr/lib/swift/libswift Builtin float.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                         = -12
          stat64("/usr/lib/swift/libswift Concurrency.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                            = -12
0x7FF7B1C57A70,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswift_Concurrency.dylib\0'',
          stat64("/usr/lib/swift/libswift Concurrency.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                            = -12
          stat64("/usr/lib/swift/libswift RegexParser.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                           = -12
0x7FF7B1C57A70,0x0) \label{eq:continuous_preboot_cryptexes_os_usr_lib/swift_libswift_RegexParser.dylib\0",
          stat64("/usr/lib/swift/libswift_RegexParser.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                           = -12
          stat64("/usr/lib/swift/libswift StringProcessing.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                             = -12
0", 0x7FF7B1C57A70, 0x0) = -1 2 Cryptexes/OS/usr/lib/swift/libswift_StringProcessing.dylib\
          stat64("/usr/lib/swift/libswift StringProcessing.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                             = -12
          stat64("/usr/lib/swift/libswift errno.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                               = -12
0x7FF7B1C57A80,0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswift_errno.dylib\0",
          stat64("/usr/lib/swift/libswift_errno.dylib\0", 0x7FF7B1C57AD0, 0x0)
          stat64("/usr/lib/swift/libswift_math.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                               = -12
0x7FF7B1C57A80,0x0) \begin{tabular}{l} 0x7FF7B1C57A80,0x0\\ \hline = -12\\ \hline \end{tabular} Preboot/Cryptexes/OS/usr/lib/swift/libswift_math.dylib\0'', and a sum of the control 
          stat64("/usr/lib/swift/libswift math.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                               = -12
          stat64("/usr/lib/swift/libswift signal.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
0x7FF7B1C57A80,0x0) \\ = -1.2 \\ \text{Cryptexes/OS/usr/lib/swift/libswift\_signal.dylib\0''},
          stat64("/usr/lib/swift/libswift signal.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
          stat64("/usr/lib/swift/libswift stdio.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
0x7FF7B1C57A80,0x0) Volumes/Prepoot/Cryptexes/OS/usr/lib/swift/libswift_stdio.dylib\0",
          stat64("/usr/lib/swift/libswift stdio.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                             = -12
                                                                                                                              = -12
          stat64("/usr/lib/swift/libswift time.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A80,0x0) = -12
          stat64("/usr/lib/swift/libswift_time.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
          stat64("/usr/lib/swift/libswiftsys time.dylib\0", 0x7FF7B1C57AD0, 0x0)
0x7FF7B1C57A70, 0x0) Volumes/Preboot/Cryptexes/OS/usr/lib/swift/libswiftsys\_time.dylib\0'',
          stat64("/usr/lib/swift/libswiftsys time.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                                = -12
          stat64("/usr/lib/swift/libswiftunistd.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
0x7FF7B1C57A80,0x0) \label{eq:continuous} $0x7FF7B1C57A80,0x0)$
          stat64("/usr/lib/swift/libswiftunistd.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                                                              = -12
```

```
= -1 2 stat64("/usr/lib/system/libsystem_darwindirectory.dylib\0", 0x7FF7B1C57AD0, 0x0)
lib \ 0", \ stat 64 ("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem_darwindirectory.dy = -12
= -1 2 stat64("/usr/lib/system/libsystem_darwindirectory.dylib\0", 0x7FF7B1C57AD0, 0x0)
      stat64("/usr/lib/system/libsystem_eligibility.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                         = -12
0x7FF7B1C57A70, 0x0) stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem_eligibility.dylib\0",
      stat64("/usr/lib/system/libsystem eligibility.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                         = -12
      stat64("/usr/lib/system/libsystem sanitizers.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                         = -12
0x7FF7B1C57A70, 0x0) = -1 2 stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem_sanitizers.dylib\0",
      stat64("/usr/lib/system/libsystem sanitizers.dylib\0", 0x7FF7B1C57AD0, 0x0)
                                                                                         = -12
      open("/Users/romanmarkin/Documents/OS labs/lab 2/parallel merge sort\0", 0x0, 0x0)
= 3.0
       mac syscall(0x7FF819E34F23, 0x2, 0x7FF7B1C58200)
                                                                      = 0.0
      map with linking np(0x7FF7B1C58170, 0x1, 0x7FF7B1C581A0)
                                                                               = -122
      close(0x3)
      mprotect(0x10E298000, 0x4000, 0x1)
                                                  = 0.0
      open("/dev/dtracehelper\0", 0x2, 0x0)
                                                  = 30
      ioctl(0x3, 0x80086804, 0x7FF7B1C57638)
                                                     = 0 0
      close(0x3)
                        = 0.0
      shared region check np(0xFFFFFFFFFFFFFFFF, 0x0, 0x0)
                                                                         = 0.0
      access("/AppleInternal/XBS/.isChrooted\0", 0x0, 0x0)
                                                                  = -12
      bsdthread register(0x7FF81A13CBE0, 0x7FF81A13CBCC, 0x2000)
                                                                                = 10737423030
      getpid(0x0, 0x0, 0x0)
                                 = 287880
      shm open(0x7FF819FE0F42, 0x0, 0x19FDF388)
                                                              = 30
      fstat64(0x3, 0x7FF7B1C57D60, 0x0)
                                                  = 0 \ 0
      mmap(0x0, 0x5000, 0x1, 0x40001, 0x3, 0x0)
                                                         = 0x10E2A60000
                        = 0.0
      close(0x3)
      csops(0x7074, 0x0, 0x7FF7B1C57E94)
                                                    = 0.0
      ioctl(0x2, 0x4004667A, 0x7FF7B1C57E24)
                                                     = 0 0
      mprotect(0x10E2B0000, 0x1000, 0x0)
                                                   = 0.0
      mprotect(0x10E2BC000, 0x1000, 0x0)
                                                   = 0.0
      mprotect(0x10E2BD000, 0x1000, 0x0)
                                                   = 0 0
      mprotect(0x10E2C9000, 0x1000, 0x0)
                                                   = 0.0
      mprotect(0x10E2AB000, 0xC8, 0x1)
                                                   = 0 \ 0
      mprotect(0x10E2AB000, 0xC8, 0x3)
                                                   = 0.0
      mprotect(0x10E2AB000, 0xC8, 0x1)
                                                   = 0 \ 0
      mprotect(0x10E2CA000, 0x1000, 0x1)
                                                   =00
                                                   = 0 \ 0
      mprotect(0x10E2CB000, 0xC8, 0x1)
      mprotect(0x10E2CB000, 0xC8, 0x3)
                                                   = 0.0
      mprotect(0x10E2CB000, 0xC8, 0x1)
                                                   = 0 \ 0
      mprotect(0x10E2AB000, 0xC8, 0x3)
                                                   = 0.0
      mprotect(0x10E2AB000, 0xC8, 0x1)
                                                   = 0 0
      mprotect(0x10E2CA000, 0x1000, 0x3)
                                                   = 0.0
      mprotect(0x10E2CA000, 0x1000, 0x1)
                                                   =00
      issetugid(0x0, 0x0, 0x0)
                                      = 0.0
```

```
getentropy(0x7FF7B1C57560, 0x20, 0x0)
0x7FF7B1C57D00, 0x7FF7B1C57D1C) getattrlist("/Users/romanmarkin/Documents/OS_labs/lab_2/parallel_merge_sort\0",
      access("/Users/romanmarkin/Documents/OS labs/lab 2\0", 0x4, 0x0)
                                                                                   = 0.0
      open("/Users/romanmarkin/Documents/OS labs/lab 2\0", 0x0, 0x0)
                                                                              = 3.0
      fstat64(0x3, 0x7F8D7FF04470, 0x0)
                                                 = 0.0
      csrctl(0x0, 0x7FF7B1C57F2C, 0x4)
                                                 = -11
      fgetattrlist(0x3, 0x7FF7B1C57FC0, 0x7FF7B1C57F40)
                                                                    = 0.0
      mac syscall(0x7FF8263EA555, 0x2, 0x7FF7B1C57F40)
                                                                      = 0.0
      fcntl(0x3, 0x32, 0x7FF7B1C57C10)
                                                  = 0.0
      close(0x3)
                        = 0.0
      open("/Users/romanmarkin/Documents/OS labs/lab 2/Info.plist\0", 0x0, 0x0)
                                                                                          = -12
      proc info(0x2, 0x7074, 0xD)
                                         = 640
      csops audittoken(0x7074, 0x10, 0x7FF7B1C57F60)
                                                              = -122
dtrace: error on enabled probe ID 1747 (ID 573: syscall::sysctl:return): invalid kernel access in action #10 at DIF offset 28
dtrace: error on enabled probe ID 1747 (ID 573: syscall::sysctl:return): invalid kernel access in action #10 at DIF offset 28
      bsdthread create(0x10E2979D0, 0x7FF7B1C6B748, 0x70000425B000)
                                                                                =695787520
      bsdthread create(0x10E2979D0, 0x7FF7B1C6B738, 0x7000042DE000)
                                                                                 = 70115328 0
      thread selfid(0x0, 0x0, 0x0)
                                        = 21956400
      thread selfid(0x0, 0x0, 0x0)
                                        = 21956410
      bsdthread create(0x10E2979D0, 0x70000425AF78, 0x700004361000)
                                                                               = 706519040
      bsdthread create(0x10E2979D0, 0x7000042DDF78, 0x7000043E4000)
                                                                                =711884800
      thread selfid(0x0, 0x0, 0x0)
                                        = 21956420
      thread selfid(0x0, 0x0, 0x0)
                                        = 2195643 0
      madvise(0x7F8D80BD2000, 0x10000, 0x9)
                                                     = 0.0
      madvise(0x7F8D80BE2000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B00000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B10000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B20000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B30000, 0x10000, 0x9)
                                                     = 0.0
      madvise(0x7F8D82B40000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B50000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B50000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B40000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B40000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B50000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B30000, 0x10000, 0x9)
                                                     = 0 0
      ulock wait2(0x1050002, 0x10E2AF980, 0x1B0A)
                                                             = 0 0
      ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                                      = -20
      madvise(0x7F8D82B20000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B10000, 0x10000, 0x9)
                                                     = 0.0
      madvise(0x7F8D82B00000, 0x10000, 0x9)
                                                     = 0 0
      madvise(0x7F8D82B60000, 0x1F000, 0x9)
                                                     = 0.0
      madvise(0x7F8D82B7F000, 0x1F000, 0x9)
                                                     = 0.0
      madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                                     = 0.0
```

= 0.0

madvise(0x7F8D82BBD000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82C1A000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82C39000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B00000, 0x10000, 0x9)	$= 0 \ 0$
madvise(0x7F8D82B10000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B20000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B30000, 0x10000, 0x9)	$= 0 \ 0$
madvise(0x7F8D82B10000, 0x10000, 0x9)	$= 0 \ 0$
madvise(0x7F8D82B00000, 0x10000, 0x9)	$= 0 \ 0$
madvise(0x7F8D82B50000, 0x10000, 0x9)	$= 0 \ 0$
madvise(0x7F8D82B40000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B40000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B50000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B00000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B10000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B50000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B40000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B30000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82B20000, 0x10000, 0x9)	= 0 0
madvise(0x7F8D82C39000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82C1A000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)	= 0.0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)	= 0 0
	= 0 0
madvise(0x7F8D82B60000, 0x1F000, 0x9)	
madvise(0x7F8D82C58000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82C96000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82F00000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82F3E000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82F7C000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82FBA000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D85800000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D8583E000, 0x3E000, 0x9)	= 0 0
madvise(0x7F8D82B60000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B60000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B60000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)	= 0 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)	= 0 0

```
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0 \ 0
                                            = 0 \ 0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0 \ 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                            = 0 \ 0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)
madvise(0x7F8D82B60000, 0x1F000, 0x9)
                                            = 0.0
madvise(0x7F8D82B60000, 0x1F000, 0x9)
                                            = 0 0
madvise(0x7F8D82B7F000, 0x1F000, 0x9)
                                            = 0.0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                            = 0.0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0 \ 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0 0
ulock wait2(0x1050002, 0x10E2AF980, 0x1802)
                                                   = 0 \ 0
ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                             = -20
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0 0
ulock wait2(0x1050002, 0x10E2AF980, 0x1C06)
                                                   = 0.0
ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                             = -20
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0.0
ulock wait2(0x1050002, 0x10E2AF980, 0x1802)
                                                   = 0.0
ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                             = -20
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                            = 0.0
ulock wait2(0x1050002, 0x10E2AF980, 0x1C06)
                                                   = 0.0
ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                             = -20
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D8583E000, 0x3E000, 0x9)
                                            = 0 \ 0
madvise(0x7F8D85800000, 0x3E000, 0x9)
                                            = 0 0
madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                             = 0.0
madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                             = 0 \ 0
madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                             = 0 0
madvise(0x7F8D82FBA000, 0x3E000, 0x9)
                                             = 0 0
```

```
madvise(0x7F8D82F7C000, 0x3E000, 0x9)
                                                       = 0 0
      madvise(0x7F8D82BDC000, 0x1F000, 0x9)
                                                       = 0 0
      madvise(0x7F8D82BBD000, 0x1F000, 0x9)
                                                       = 0 0
      madvise(0x7F8D82BFB000, 0x1F000, 0x9)
                                                       = 0 0
      madvise(0x7F8D82B9E000, 0x1F000, 0x9)
                                                      = 0 \ 0
      madvise(0x7F8D82F7C000, 0x3E000, 0x9)
                                                      = 0 \ 0
      madvise(0x7F8D82FBA000, 0x3E000, 0x9)
                                                       = 0 0
      madvise(0x7F8D85800000, 0x3E000, 0x9)
                                                      = 0 0
      madvise(0x7F8D8583E000, 0x3E000, 0x9)
                                                      = 0.0
      madvise(0x7F8D8587C000, 0x7B000, 0x9)
                                                      = 0 0
      madvise(0x7F8D858F7000, 0x7B000, 0x9)
                                                      = 0 0
      madvise(0x7F8D85972000, 0x7B000, 0x9)
                                                      = 0 0
      madvise(0x7F8D859ED000, 0x7B000, 0x9)
                                                       = 0 0
       disable threadsignal (0x1, 0x0, 0x0)
                                                  = 0 \ 0
      madvise(0x7F8D85A68000, 0x7B000, 0x9)
                                                      = 0.0
      madvise(0x7F8D85AE3000, 0x7B000, 0x9)
                                                      = 0 0
      madvise(0x7F8D85B5E000, 0x7B000, 0x9)
                                                      = 0 0
      ulock wait2(0x1050002, 0x10E2AF980, 0x1802)
                                                             = 0.0
      ulock wake(0x1000002, 0x10E2AF980, 0x0)
                                                       = -20
      madvise(0x7F8D85BD9000, 0x7B000, 0x9)
                                                       = 0 0
        disable threadsignal(0x1, 0x0, 0x0)
       ulock wake(0x1000002, 0x7000043E4034, 0x0)
                                                             = 0.0
      ulock wait(0x1020002, 0x7000043E4034, 0x1803)
                                                             = 0 0
      madvise(0x7F8D85C54000, 0xF5000, 0x9)
                                                      = 0.0
      madvise(0x7F8D85D49000, 0xF5000, 0x9)
                                                      = 0 0
       disable threadsignal(0x1, 0x0, 0x0)
                                                  = 0.0
      ulock wake(0x1000002, 0x70000425B034, 0x0)
                                                             = 0 0
      ulock wait(0x1020002, 0x70000425B034, 0x1C07)
                                                              = 0.0
      madvise(0x7F8D85E3E000, 0xF5000, 0x9)
                                                      = 0 \ 0
      madvise(0x7F8D85F33000, 0xF5000, 0x9)
                                                      = 0 0
       disable threadsignal(0x1, 0x0, 0x0)
                                                  = 0.0
      ulock wake(0x1000002, 0x7000042DE034, 0x0)
                                                             = 0.0
      ulock wait(0x1020002, 0x7000042DE034, 0x1B0B)
                                                               = 0.0
      madvise(0x7F8D82B00000, 0x1E9000, 0x9)
                                                       = 0.0
      madvise(0x7F8D86028000, 0x1E9000, 0x9)
                                                      = 0.0
      fstat64(0x1, 0x7FF7B1C6B478, 0x0)
                                                   = 0 0
      ioctl(0x1, 0x4004667A, 0x7FF7B1C6B4C4)
                                                      = 0.0
dtrace: error on enabled probe ID 1718 (ID 963: syscall::write_nocancel:return): invalid kernel access in action #12 at DIF offset 68
dtrace: error on enabled probe ID 1718 (ID 963: syscall::write_nocancel:return): invalid kernel access in action #12 at DIF offset 68
      madvise(0x7F8D80800000, 0x3D1000, 0x9)
                                                      = 0.0
```

Вывод

В ходе выполнения данной лабораторной работы я получил ценный опыт работы с многопоточностью и синхронизацией в программах на языке С.