Code:

```
1   #include<stdio.h>
2   #include<stdlib.h>
3   #include<conio.h>
4   #include<time.h>
5   void quicksort(int number[25],int first,int last){
6       int i, j, pivot, temp;
7       if(first<last){
8           pivot=first;
9           i=first;
10          j=last;
11          while(i<j){
12              while(number[i]<=number[pivot]&&i<last)
13                  i++;
14              while(number[j]>number[pivot])
15                  j--;
16              if(i<j){
17                  temp=number[i];
18                  number[i]=number[j];
19                  number[j]=temp;}}
20          temp=number[pivot];
21          number[pivot]=number[j];
22          number[j]=temp;
23          quicksort(number,first,j-1);
24          quicksort(number,j+1,last);}}
25
```

```
25
26      int main(){
27  clock_t start,end;double tu,t[5];
28      int i,j,temp,count, number[25000];
29      int ch;
30      while(1)
31  {
32  printf("\n1:For manual entry of N value and array elements");
33  printf("\n2:To display time taken for sorting number of elements N in the range 500 to 14500");
34  printf("\n3:To exit");
35  printf("\nEnter your choice:");
36  scanf("%d", &ch);
37  switch(ch)
38  {
39  case 1:printf("Enter number of elements : ");
40      scanf("%d",&count);
41      printf("Enter %d elements: ", count);
42      start=clock();
43      for(i=0;i<count;i++)
44          scanf("%d",&number[i]);
45      quicksort(number,0,count-1);
46      end=clock();
47      tu=((double)(end-start))/CLOCKS_PER_SEC;
48      printf("Order of Sorted elements: ");
49      for(i=0;i<count;i++)
50          printf(" %d",number[i]);
51      printf("\nTime used %lfs",tu);
52  break;
```

```c
53  case 2:
54  count=500;
55  while(count<=14500) {
56  for(i=0;i<count;i++)
57  {
58  number[i]=count-i;
59  }
60  start=clock();
61  quicksort(number,0,count-1);
62  //Dummy loop to create delay
63  for(j=0;j<145000;j++){ temp=38/600;}
64  end=clock();
65  printf("\n Time taken to sort %d numbers is %f Secs",count, (((double)(end-start))/CLOCKS_PER_SEC));
66  count=count+500;
67  }
68  break;
69  case 3: exit(0);
70  }
71  getchar();
72  }
73  return 0;
74  }
```

Output:

```
1:For manual entry of N value and array elements
2:To display time taken for sorting number of elements N in the range 500 to 14500
3:To exit
Enter your choice:
1
Enter number of elements : 6
Enter 6 elements: 6
8
4
2
5
3
Order of Sorted elements:  2 3 4 5 6 8
Time used 0.000200s
1:For manual entry of N value and array elements
2:To display time taken for sorting number of elements N in the range 500 to 14500
3:To exit
Enter your choice:2

 Time taken to sort 500 numbers is 0.000783 Secs
 Time taken to sort 1000 numbers is 0.001946 Secs
 Time taken to sort 1500 numbers is 0.003702 Secs
 Time taken to sort 2000 numbers is 0.006232 Secs
 Time taken to sort 2500 numbers is 0.009469 Secs
 Time taken to sort 3000 numbers is 0.013383 Secs
 Time taken to sort 3500 numbers is 0.018200 Secs
 Time taken to sort 4000 numbers is 0.023958 Secs
 Time taken to sort 4500 numbers is 0.029804 Secs
 Time taken to sort 5000 numbers is 0.036982 Secs
 Time taken to sort 5500 numbers is 0.043866 Secs
 Time taken to sort 6000 numbers is 0.052647 Secs
 Time taken to sort 6500 numbers is 0.061386 Secs
```

```
 Time taken to sort 6500 numbers is 0.061386 Secs
 Time taken to sort 7000 numbers is 0.070423 Secs
 Time taken to sort 7500 numbers is 0.081529 Secs
 Time taken to sort 8000 numbers is 0.094323 Secs
 Time taken to sort 8500 numbers is 0.105466 Secs
 Time taken to sort 9000 numbers is 0.117351 Secs
 Time taken to sort 9500 numbers is 0.129614 Secs
 Time taken to sort 10000 numbers is 0.145222 Secs
 Time taken to sort 10500 numbers is 0.158619 Secs
 Time taken to sort 11000 numbers is 0.174996 Secs
 Time taken to sort 11500 numbers is 0.191147 Secs
 Time taken to sort 12000 numbers is 0.207342 Secs
 Time taken to sort 12500 numbers is 0.234903 Secs
 Time taken to sort 13000 numbers is 0.252119 Secs
 Time taken to sort 13500 numbers is 0.265274 Secs
 Time taken to sort 14000 numbers is 0.282165 Secs
 Time taken to sort 14500 numbers is 0.306097 Secs
1:For manual entry of N value and array elements
2:To display time taken for sorting number of elements N in the range 500 to 14500
3:To exit
Enter your choice:3


...Program finished with exit code 0
Press ENTER to exit console.
```