

ابتدا با توضیح کد شروع می‌کنیم و به تست آن می‌پردازیم.

تعریف ورودی‌ها و خروجی‌ها، و آنزودن c-time، که نشان‌دهنده زمان فعلی می‌باشد تا طبق آن بتوانیم چه کنیم.

```

1 module parking (input car_entered, input is_uni_car_entered, input car_exited, input is_uni_car_exited, input [4:0] c_time,
2 output reg [9:0] uni_parked_car, output reg [9:0] parked_car, output reg [9:0] uni_vacated_space, output reg [9:0] vacated_space, output reg [9:0] uni_is_vacated_space, output reg [9:0] is_vacated_space);
3 //now, first, every space is empty and there is no problem, so we have to adjust that.
4 initial begin
5     uni_is_vacated_space=1;
6     is_vacated_space=1;
7     uni_parked_car=0;
8     parked_car=0;
9 end
10 reg [9:0] allUniSpace;
11 reg [9:0] allNonUniSpace;
12 initial begin
13     uni_vacated_space=500;
14     vacated_space=200;
15 end
16 always @(c_time) begin
17     if (c_time < 8) begin
18         allUniSpace=0;
19         allNonUniSpace=0;
20         //it is closed so all spaces are zero//
21         uni_parked_car=0;
22         parked_car=0;
23         uni_vacated_space=0;
24         vacated_space=0;
25         uni_is_vacated_space=0;
26         is_vacated_space=0;
27     end
28     else if (c_time >= 8 && c_time < 13) begin
29         //we have to make the spaces right, Note: we always go from zero, to this state.
30         allUniSpace = 500;
31         allNonUniSpace = 200;
32     end
33     else if (c_time >= 13 && c_time < 16) begin
34         //we make the spaces correct
35         allUniSpace = 500 - (c_time - 12) * 50;
36         allNonUniSpace = 700 - allUniSpace;
37         if (uni_parked_car > allUniSpace) begin
38             parked_car = parked_car + (uni_parked_car - allUniSpace);
39             vacated_space = allNonUniSpace - parked_car;
40             uni_parked_car = allUniSpace;
41             uni_vacated_space = 0;
42             uni_is_vacated_space=0;
43         end
44         else begin
45             vacated_space = allNonUniSpace - parked_car;
46             uni_vacated_space = allUniSpace - uni_parked_car;
47         end
48     end
49     else if (c_time >= 16) begin
50         allUniSpace = 200;
51         allNonUniSpace = 500;

```

در ابتدا، ماشین‌ها یا پارک شده‌اند و همه جا خالی هستند.

فضای کل برای ایستادن غیر واحد.

در ابتدا فرض می‌کنیم ساعت ۸ است.

(I)

ساعت ۸ به ۱۳ می‌رسد و در این زمان همه جا خالی است و هیچ ماشین‌هاست در پارکینگ.

با آغاز روز، تعداد پارکینگ‌ها.

درست کردن مقیاس‌ها.

اگر پس از آن مقیاس‌ها درست باشد، تعداد ماشین‌ها در پارکینگ.

در این صورت، باید قادر به پارک شدن.

اگر بیشتر شد، باید به طریقی ماشین‌ها را کم کنیم.

(I) چرا احساس می‌کنیم که c-time؟ چون مقیاس‌ها در حالیکه هیچ ورودی و خروجی انجام نمی‌دهد، ثابت می‌مانند.

این تصحیحات کامل است، تصحیحات اداره کد در مخفی‌ها بعد.

```
51 allNonUniSpace = 500;
52 if (uni_parked_car > allUniSpace) begin
53     parked_car = parked_car + (uni_parked_car - allUniSpace);
54     vacated_space = allNonUniSpace - parked_car;
55     uni_parked_car = allUniSpace;
56     uni_vacated_space = 0;
57     uni_is_vacated_space = 0;
58 end
59 else begin
60     vacated_space = allNonUniSpace - parked_car;
61     uni_vacated_space = allUniSpace - uni_parked_car;
62 end
63 end
64 end
65 always @(posedge car_entered or posedge car_exited) begin
66     //checking for car entrance
67     if (car_entered && c_time >= 8) begin
68         // is it for uni??
69         if (is_uni_car_entered) begin
70             if (uni_is_vacated_space) begin //is there enough space?
71                 uni_parked_car = uni_parked_car + 1;
72                 uni_vacated_space = uni_vacated_space - 1;
73             end
74             //is there a vacated space??
75             else if (is_vacated_space) begin
76                 parked_car = parked_car + 1;
77                 vacated_space = vacated_space - 1;
78             end
79         end
80         else begin
81             //it's non uni
82             if (is_vacated_space) begin
83                 parked_car = parked_car + 1;
84                 vacated_space = vacated_space - 1;
85             end
86         end
87         //update the signals
88         if (uni_vacated_space == 0)
89             uni_is_vacated_space = 0;
90         if (vacated_space == 0)
91             is_vacated_space = 0;
92     end
93     //checking for car exit
94     if (car_exited && c_time >= 8) begin
95         if (is_uni_car_exited && uni_parked_car > 0) begin // is it for uni??
96             uni_parked_car = uni_parked_car - 1;
97             uni_is_vacated_space = 1;
98             uni_vacated_space = uni_vacated_space + 1;
99         end
100         //it's non-uni
101         else if (parked_car > 0) begin
102             parked_car = parked_car - 1;
103             vacated_space = vacated_space + 1;
104             is_vacated_space = 1;
105         end
106     end
107 end
108 endmodule
```

توضیحات دقت سازد
تبدیل واحد

اگر یک ماشین وارد یا خارج شد
محلیات را انجام بده
اگر برای دانشگاه بود
اگر برای دانشگاه بود و در آنجا خد
ضرورت نیست، اما رضا کارا در
برداشت استفاده کنید
اگر برای ضرورت آزاد بود و اگر
آیدیت بکن
الهی هیچ جا کار نیست
حالت است

اگر یک ماشین خارج شد، اگر خارج شد رضا کارا
زیادترین دلیل رضا کارا داریم

به سادگی نتواند کار کرد. توضیحات در صفحه کایع

بزرگداشت خلیفه جابر، خلیفه کامل، نمی‌تواند رستگار شود، بزرگداشت حسین، ابتدا ۴۰۰ سالش وارد
پارک شد، هرگز این یک کد را ننویسیم، که بزرگداشت ما است، هر بار بازر. این کد بصورت زیر
است، بعداً بخش‌هایش را با کد با آن تغییر داده است. کد را ننویس.

```
1 import random
2
3 # Define the Verilog-like code template
4 template = ""
5 #1
6 $display("{display_text}");
7 is_uni_car_entered={enter_exit_1}; is_uni_car_exited={enter_exit_2};
8 car_entered={car_1}; car_exited={car_2};
9 #1
10 $display("time:%d uni parked_car: %d parked_car: %d uni vacated_space: %d vacated space: %d uni is vacated space: %d is vacated space: %d\n",
11 is_uni_car_entered={enter_exit_3}; is_uni_car_exited={enter_exit_4};
12 car_entered={car_3}; car_exited={car_4};
13 ""
14
15 iter=50 #change this as you would like
16 for i in range(iter):
17     enter_exit_1 = random.choice([1, 0])
18     enter_exit_2 = 1 - enter_exit_1 # opposite of enter_exit_1
19     enter_exit_3 = random.choice([0, 1])
20     enter_exit_4 = 1 - enter_exit_3 # opposite of enter_exit_3
21     car_1 = random.choice([1, 0])
22     car_2 = 1 - car_1 # opposite of car_1
23     car_3 = 0
24     car_4 = 0 # opposite of car_3
25     if(car_1 and enter_exit_1):
26         display_text='uni car entered'
27     elif (car_1 and not enter_exit_1):
28         display_text='free car entered'
29     elif (not car_1 and enter_exit_2):
30         display_text='uni car exited'
31     elif (not car_1 and not enter_exit_2):
32         display_text = 'free car exited'
33     # Fill in the template with random choices
34     code_instance = template.format(enter_exit_1=enter_exit_1, enter_exit_2=enter_exit_2,
35                                     enter_exit_3=enter_exit_3, enter_exit_4=enter_exit_4,
36                                     car_1=car_1, car_2=car_2, car_3=car_3, car_4=car_4, display_text=display_text)
37
38     # Print the generated Verilog-like code instance
39     print(code_instance.strip())
```

حال با این کد، خط‌ها را در کد ننویسیم، در صفحه کاغذ، کد را ننویسیم.


```
1 module parking_TB ();
2 wire [9:0] uni_parked_car;
3 wire [9:0] parked_car;
4 wire [9:0] uni_vacated_space;
5 wire [9:0] vacated_space;
6 wire uni_is_vacated_space;
7 wire is_vacated_space;
8 reg car_entered = 0;
9 reg is_uni_car_entered = 0;
10 reg car_exited = 0;
11 reg is_uni_car_exited = 0;
12 reg [4:0] c_time;
13 integer i;
14 parking_parking (car_entered, is_uni_car_entered, car_exited, is_uni_car_exited, c_time, uni_parked_car, parked_car, uni_vacated_space, vacated_space,
15 uni_is_vacated_space, is_vacated_space);
16 always #50 c_time=(c_time+1)%24;
17 initial begin
18     #10;
19     c_time=8;
20     car_entered = 0; is_uni_car_entered = 0; car_exited = 0; is_uni_car_exited = 0;
21     for(i = 0; i < 400; i = i + 1) begin
22         c_time = 8; car_entered = 1; is_uni_car_entered = 1; #1;
23         car_entered = 0; is_uni_car_entered = 0; #1;
24     end
25     #1;
26     $display("uni car entred");
27     is_uni_car_entered=1;
28     car_entered=1;
29     #1
30     $display("time : %d uni parked_car: %d parked_car: %d uni vacated_space: %d vacated space: %d uni is vacated space: %d is vacated space: %d\n", c_time, uni_parked_car, parked_car, uni_vacated_space, vacated_space, uni_is_vacated_space, is_vacated_space);
31     is_uni_car_entered=0;
32     car_entered=0;
33     #1;
34     $display("non uni car entred");
35     is_uni_car_entered=0;
36     car_entered=1;
37     #1
38     $display("time : %d uni parked_car: %d parked_car: %d uni vacated_space: %d vacated space: %d uni is vacated space: %d is vacated space: %d\n", c_time, uni_parked_car, parked_car, uni_vacated_space, vacated_space, uni_is_vacated_space, is_vacated_space);
39     is_uni_car_entered=0;
40     car_entered=0;
41     #1;
42     $display("non uni car exited");
43     is_uni_car_exited=1;
44     car_exited=1;
45     #1
46     $display("time : %d uni parked_car: %d parked_car: %d uni vacated_space: %d vacated space: %d uni is vacated space: %d is vacated space: %d\n", c_time, uni_parked_car, parked_car, uni_vacated_space, vacated_space, uni_is_vacated_space, is_vacated_space);
47     is_uni_car_exited=0;
48     car_exited=0;
49
50     #1
51     c_time=14;
52     #1
53     $display("free car entred");
54     is_uni_car_entered=0; is_uni_car_exited=1;
55     car_entered=1; car_exited=0;
56     #1
57     $display("time:%d uni parked_car: %d parked_car: %d uni vacated_space: %d vacated space: %d uni is vacated space: %d is vacated space: %d\n", c_time, uni_parked_car, parked_car, uni_vacated_space, vacated_space, uni_is_vacated_space, is_vacated_space);
58     is_uni_car_entered=0; is_uni_car_exited=1;
59     car_entered=0; car_exited=0;
60
61     #1
```

تعریف کردن

درد ۴۰۰ تین }

* آپدیت کردن زمان، به هم ادراس

تعریف به کد با بستن، این که ده خط است، می توانست آن را در

code.zip بنویسد. به کار زیاد بستن هم نیاید بنادرم، دقیقاً همین خطوط است، و ترنج اضافه ای که

ندارد. چون در سمت م مقدار زیادی فقط خرج می داریم، همه کارها را اضافه می کردیم و

به سادگی بارش کردن که تا به این جا همه است، مثلاً سه مغزی آن را می آوردیم و دقیقاً

خرجه ای، مانند آن کاملاً درست به شکل است،

```
# uni car entred
# time : 8 uni parked_car: 401 parked_car: 0 uni vacated_space: 99 vacated space: 200 uni is vacated space: 1 is vacated space: 1
# non uni car entred
# time : 8 uni parked_car: 401 parked_car: 1 uni vacated_space: 99 vacated space: 199 uni is vacated space: 1 is vacated space: 1
# non uni car exited
# time : 8 uni parked_car: 400 parked_car: 1 uni vacated_space: 100 vacated space: 199 uni is vacated space: 1 is vacated space: 1
# free car entred
# time:14 uni parked_car: 400 parked_car: 2 uni vacated_space: 0 vacated space: 498 uni is vacated space: 0 is vacated space: 1
# free car exited
# time:14 uni parked_car: 400 parked_car: 1 uni vacated_space: 0 vacated space: 499 uni is vacated space: 0 is vacated space: 1
# free car exited
# time:14 uni parked_car: 400 parked_car: 0 uni vacated_space: 0 vacated space: 500 uni is vacated space: 0 is vacated space: 1
# free car exited
# time:14 uni parked_car: 400 parked_car: 0 uni vacated_space: 0 vacated space: 500 uni is vacated space: 0 is vacated space: 1
# free car entred
# time:14 uni parked_car: 400 parked_car: 1 uni vacated_space: 0 vacated space: 499 uni is vacated space: 0 is vacated space: 1
# uni car exited
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
# free car exited
# time:14 uni parked_car: 399 parked_car: 0 uni vacated_space: 1 vacated space: 500 uni is vacated space: 1 is vacated space: 1
# free car entred
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
# uni car exited
# time:14 uni parked_car: 398 parked_car: 1 uni vacated_space: 2 vacated space: 499 uni is vacated space: 1 is vacated space: 1
# uni car exited
# time:14 uni parked_car: 397 parked_car: 1 uni vacated_space: 3 vacated space: 499 uni is vacated space: 1 is vacated space: 1
```

خرجه ها :


```
# uni car exited
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# free car exited
# time:14 uni parked_car: 399 parked_car: 0 uni vacated_space: 1 vacated space: 500 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# uni car exited
# time:14 uni parked_car: 398 parked_car: 1 uni vacated_space: 2 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# uni car exited
# time:14 uni parked_car: 397 parked_car: 1 uni vacated_space: 3 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# free car exited
# time:14 uni parked_car: 397 parked_car: 0 uni vacated_space: 3 vacated space: 500 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:14 uni parked_car: 397 parked_car: 1 uni vacated_space: 3 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# uni car entred
# time:14 uni parked_car: 398 parked_car: 1 uni vacated_space: 2 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:14 uni parked_car: 398 parked_car: 2 uni vacated_space: 2 vacated space: 498 uni is vacated space: 1 is vacated space: 1
#
#
# free car exited
# time:14 uni parked_car: 398 parked_car: 1 uni vacated_space: 2 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# uni car entred
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 350 parked_car: 51 uni vacated_space: 0 vacated space: 149 uni is vacated space: 0 is vacated space: 1
#
```

```
# time:14 uni parked_car: 398 parked_car: 1 uni vacated_space: 2 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# uni car entred
# time:14 uni parked_car: 399 parked_car: 1 uni vacated_space: 1 vacated space: 499 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 350 parked_car: 51 uni vacated_space: 0 vacated space: 149 uni is vacated space: 0 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 350 parked_car: 52 uni vacated_space: 0 vacated space: 148 uni is vacated space: 0 is vacated space: 1
#
#
# free car exited
# time:15 uni parked_car: 350 parked_car: 51 uni vacated_space: 0 vacated space: 149 uni is vacated space: 0 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 350 parked_car: 52 uni vacated_space: 0 vacated space: 148 uni is vacated space: 0 is vacated space: 1
#
#
# uni car exited
# time:15 uni parked_car: 349 parked_car: 52 uni vacated_space: 1 vacated space: 148 uni is vacated space: 1 is vacated space: 1
#
#
# free car exited
# time:15 uni parked_car: 349 parked_car: 51 uni vacated_space: 1 vacated space: 149 uni is vacated space: 1 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 349 parked_car: 52 uni vacated_space: 1 vacated space: 148 uni is vacated space: 1 is vacated space: 1
#
#
# free car exited
# time:15 uni parked_car: 349 parked_car: 51 uni vacated_space: 1 vacated space: 149 uni is vacated space: 1 is vacated space: 1
#
#
# uni car entred
# time:15 uni parked_car: 350 parked_car: 51 uni vacated_space: 0 vacated space: 149 uni is vacated space: 0 is vacated space: 1
#
#
# free car entred
# time:15 uni parked_car: 350 parked_car: 52 uni vacated_space: 0 vacated space: 148 uni is vacated space: 0 is vacated space: 1
#
#
# free car exited
```

بقیه فرجه‌های کار در دست است و برای کجایم شدن باید بنایم چون حدود ۱۰۰۰ خط

است باید بران کردن به بار دهی

خانه بنایم