ECE357, Computer Operating Systems – Problem Set #4, Problem 3 Nikola Janjušević November 8, 2018

1 Example Usage

nikopj@s15:~/Documents/OS/hw4\$./cgm.out Frodo lotr1.txt lotr2.txt lotr3.txt to tackle the journey of Frodo to Mordor. These chapters, eventually to importance. But in the days of Bilbo, and of Frodo his heir, they suddenly inhabited by large families. (Bilbo and Frodo Baggins were as bachelors very revealed to no one, not even to Frodo his favourite 'nephew'. And he still from notes by Frodo or Samwise, both of whom learned the truth, though they 7 and Frodo; and no one else in the Shire knew of its existence, or so he 8 believed. Only to Frodo did he show the account of his Journey that he was 9 to Rivendell. Frodo brought it back to the Shire, together with many loose 10 living and written. But since they were little used by Frodo, being almost The eldest of these, and Bilbo's favourite, was young Frodo Baggins. 11 12 When Bilbo was ninety-nine, he adopted Frodo as his heir, and brought him to 13 dashed. Bilbo and Frodo happened to have the same birthday, September $\mbox{'You had}$ better come and live here, Frodo my lad, $\mbox{'}$ said Bilbo one day; $\mbox{'}$ and 14 time Frodo was still in his tweens, as the hobbits called the irresponsible 16 and Frodo was going to be thirty-three, 33) an important number: the date of 17were on very friendly terms with Bilbo and Frodo. They lived on the Hill 'But what about this Frodo that lives with him?' asked Old Noakes of 18 wonder that trouble came of it, I say. But be that as it may, $\operatorname{Mr.}$ Frodo is 19 Frodo is his first and second cousin, once removed either way, as the saying 21were drownded, and poor Mr. Frodo only a child and all. looking further for the cause of trouble. Anyway: there was this Mr. Frodo Bilbo and Frodo were related, with the addition of a few special unrelated detested Frodo, but so magnificent was the invitation card, written in 25 Frodo. He comes of age and into his inheritance today. Some perfunctory clapping by the elders; and some loud shouts of 'Frodo! Frodo! Jolly old 27 Frodo,' from the juniors. The Sackville-Bagginses scowled, and wondered what 28 He called loudly to Frodo to send the wine round again. Frodo was the only one present who had said nothing. For some time he present; but the Sackville-Bagginses had already departed in wrath. Frodo fine chain, and then sealed it, and addressed it to Frodo. At first he put 31 'Oh, they may, in years to come. Frodo has read some already, as far as 3233 it has gone. You'll keep an eye on Frodo, won't you?' leave it behind. Stop possessing it. Give it to Frodo, and I will look after 'Very well,' said Bilbo, 'it goes to Frodo with all the rest.' He drew mantelpiece. It will be safe enough there, till Frodo comes. I shall wait 37Frodo came in soon afterwards, and found him sitting in the dark, deep said Frodo. 'But I knew in my heart that he really meant to go. He always 39 Frodo took the envelope from the mantelpiece, and glanced at it, but 'The ring!' exclaimed Frodo. 'Has he left me that? I wonder why. Still, 40 41 As master of Bag End Frodo felt it his painful duty to say good-bye to but Frodo would only say no doubt everything will be cleared up in the Frodo was waiting on the step, smiling, but looking rather tired and surviving female relative of Bilbo and Frodo; she was ninety-nine, and had There was plenty of everything left for Frodo. And, of course, all the Frodo had a very trying time that afternoon. A false rumour that the In the middle of the commotion the Sackville-Bagginses arrived. Frodo on things. When Otho loudly demanded to see Frodo, Merry bowed politely. 49 they were shown into the study. Frodo was sitting at a table with a lot of 50 unlabelled things. When Frodo replied that only the things specially Otho would have been Bilbo's heir, but for the adoption of Frodo. He 5152 Spoons? Fiddlesticks!' He snapped his fingers under Frodo's nose and slumped off. But Lobelia was not so easily got rid of. A little later Frodo came out 5354 'Did you hear that, Merry? That was an insult, if you like,' said Frodo cellars. Frodo also had a tussle with young Sancho Proudfoot (old Odo 55 When he had overcome Sancho and pushed him out, Frodo collapsed on 'If you don't let me in, Frodo, I shall blow your door right down your 'My dear Gandalf! Half a minute!' cried Frodo, running out of the room

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59 ring, Frodo ! In fact, it is partly about that I have come to say a last
60\, 'Oh, not what he told the dwarves and put in his book,' said Frodo. 'He
61 us, Frodo," he said; "but they are not to go any further. It's mine
62 'I don't understand,' said Frodo.
63 'At once!' cried Frodo. 'Why, I thought you were staying on for at
   'Some people!' exclaimed Frodo. 'You mean Otho and Lobelia. How
65\, Frodo saw him to the door. He gave a final wave of his hand, and walked
   off at a surprising pace; but Frodo thought the old wizard looked unusually
67
   in, and his cloaked figure quickly vanished into the twilight. Frodo did not
68
   'If only that dratted wizard will leave young Frodo alone, perhaps
69 appearance the wizard did leave Frodo alone, and he did settle down, but the
70\, Some people were rather shocked; but Frodo kept up the custom of giving
71
   name was Meriadoc, but that was seldom remembered). Frodo went tramping
72\, As time went on, people began to notice that Frodo also showed signs of
   said; but it was not until Frodo approached the usually more sober age of
73
   Frodo himself, after the first shock, found that being his own master
    suddenly befallen Bilbo. Frodo began to feel restless, and the old paths
    years, Frodo gathered all the news he could. Elves, who seldom walked in the
76
    hobbits asked no more. But now Frodo often met strange dwarves of far
77
78 Frodo's fiftieth year, showed that even in the comfortable heart of the
   and Frodo's cracking. If that's where you get your news from, you'll never
79
80 Frodo a brief visit, and after taking a good look at him he went off again.
81
   interested in small news about Frodo's health and doings.
82 Then suddenly his visits had ceased. It was over nine years since Frodo
83 Frodo welcomed his old friend with surprise and great delight. They
    'Ah well eh?' said Gandalf. 'You look the same as ever, Frodo!'
   'So do you,' Frodo replied; but secretly he thought that Gandalf looked
86 Next morning after a late breakfast, the wizard was sitting with Frodo
87
   He was smoking now in silence, for Frodo was sitting still, deep in
88
   'A mortal, Frodo, who keeps one of the Great Rings, does not die, but
    'How terrifying!' said Frodo. There was another long silence. The sound
89
    'How long have you known this?' asked Frodo at length. 'And how much
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    'Yes, he warned me of that in his last letter,' said Frodo, 'so I have
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92
   'How long have you known all this?' asked Frodo again.
93
   Frodo. But if you mean "known about this ring", well, I still do not know,
94
    'Who is he?' asked Frodo. I have never heard of him before.'
    'There wasn't any permanent harm done, was there?' asked Frodo
   Frodo shuddered. 'But why should we be?' he asked. 'And why should he
97
    'Revenge?' said Frodo. 'Revenge for what? I still don't understand what
    Frodo took it from his breeches-pocket, where it was clasped to a chain
98
    wizard. It felt suddenly very heavy, as if either it or Frodo himself was in
99
100\, 'No,' said Frodo. 'There are none. It is quite plain, and it never
101\, 'Well then, look!' To Frodo's astonishment and distress the wizard
102\, threw it suddenly into the middle of a glowing corner of the fire. Frodo
103\, 'Wait!' he said in a commanding voice, giving Frodo a quick look from
104 the hearth with the tongs, and at once picked it up. Frodo gasped.
105 It is quite cool,' said Gandalf. 'Take it!' Frodo received it on his
106\, As Frodo did so, he now saw fine lines, finer than the finest
107 I cannot read the fiery letters,' said Frodo in a quavering voice.
108\, Frodo sat silent and motionless. Fear seemed to stretch out a vast
109 'I wish it need not have happened in my time,' said Frodo.
110\, time that is given, us. And already, Frodo, our time is beginning to look
111
   'And this is the dreadful chance, Frodo. He believed that the One had
112 'Why, why wasn't it destroyed?' cried Frodo. 'And how did the Enemy
113 'Gollum!' cried Frodo. 'Gollum? Do you mean that this is the very
114 distantly,' said Frodo with some heat. 'What an abominable notion!'
115
    'Yes,' said Frodo. 'Though other folks besides hobbits ask riddles, and
    'What do you mean?' said Frodo. 'Surely the Ring was his precious and
116
    'You ought to begin to understand, Frodo, after all you have heard,'
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   'A Ring of Power looks after itself, Frodo. It may slip off
119
    aside. It was not Gollum, Frodo, but the Ring itself that decided things.
    'What, just in time to meet Bilbo?' said Frodo. 'Wouldn't an Ore have
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    'There was more than one power at work, Frodo. The Ring was trying to
121
122 It is not,' said Frodo. "Though I am not sure that I understand you.
123 Gandalf looked at Frodo, and his eyes glinted. I knew much and I have
124\, asked Frodo, interrupting. 'Just now in this room, of course,' answered the
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126 'But how did he find that out?' asked Frodo. 127 'Is that where you found him?' asked Frodo. 128 'Then why didn't he track Bilbo further?' asked Frodo. 'Why didn't he 129 I made a great mistake. Yes, Frodo, and not the first; though I fear it may 130 A heavy silence fell in the room. Frodo could hear his heart beating. 131 out where it lies. Indeed, Frodo, I fear that he may even think that the 132 'But this is terrible!' cried Frodo. 'Far worse than the worst that I 133 without need. And he has been well rewarded, Frodo. Be sure that he took so 134 'I am sorry,' said Frodo. 'But I am frightened; and I do not feel any $135\,$ 'No, and I don't want to,' said Frodo. I can't understand you. Do you $136\,$ 'All the same,' said Frodo, 'even if Bilbo could not kill Gollum, I 137'Of course, my dear Frodo, it was dangerous for you; and that has 138 cried Frodo again. If you had warned me, or even sent me a message, I would 139 Frodo drew the Ring out of his pocket again and looked at it. It now gold looked very fair and pure, and Frodo thought how rich and beautiful was 140Gandalf laughed grimly. 'You see? Already you too, Frodo, cannot easily 141 142 'I do really wish to destroy it!' cried Frodo. 'Or, well, to have it
143 outside whistling. 'And now,' said the wizard, turning back to Frodo, 'the
144 Frodo's shoulder. 'I will help you bear this burden, as long as It is yours was watching Frodo intently. Frodo gazed fixedly at the red embers on the 145146 'No!' answered Frodo, coming back to himself out of darkness, and 147 'I hope so,' said Frodo. 'But I hope that you may find some other $148\,$ 'My dear Frodo!' exclaimed Gandalf. 'Hobbits really are amazing 149 Suddenly he stopped as if listening. Frodo became aware that all was 150 'Mr. Frodo, sir!' cried Sam quaking. 'Don't let him hurt me, sir! Don't 'He won't hurt you,' said Frodo, hardly able to keep from laughing, 152 'So you heard that Mr. Frodo is going away?' 153 'It can't be helped, Sam,' said Frodo sadly. He had suddenly realized 154 punish you properly for listening. You shall go away with Mr. Frodo!' $155\,$ or three weeks had passed, and still Frodo made no sign of getting ready to $156\,$ 'What about the autumn, on or after Our Birthday?' asked Frodo. 'I $157\,$ He looked at Frodo and smiled. 'Very well,' he said. 'I think that will $158\,$ 'As for where I am going,' said Frodo, 'it would be difficult to give $159\,$ Frodo. 'For where am I to go? And by what shall I steer? What is to be my 'No indeed!' said Frodo. 'But in the meantime what course am \boldsymbol{I} to 'Rivendell!' said Frodo. 'Very good: I will go east, and I will make 162 forgotten for more important matters: Mr. Frodo was selling Bag End, indeed $163\,$ Just why Mr. Frodo was selling his beautiful hole was even more $164\,$ hints of Mr. Baggins himself - that Frodo's money was running out: he was $165\,$ no doubt about the fact: Frodo Baggins was going back to Buckland. $166\,$ the end of June, soon after Frodo's plan had been finally arranged, he 167 He spoke lightly, but it seemed to Frodo that he looked rather worried. $168\,$ At first Frodo was a good deal disturbed, and wondered often what 169 Autumn was well under way before Frodo began to worry about Gandalf $170\,$ word. Bag End began to be busy. Some of Frodo's friends came to stay and 171 conveying the furniture and goods that Frodo had not sold to his new home, 172 by way of the Brandywine Bridge. The next day Frodo became really anxious, 173 Gandalf did not appear. In the evening Frodo gave his farewell feast: it was $174\,$ good wine: Frodo's wine had not been included in the sale to the 175 claws on it, at any rate I have found a good home for this!' said Frodo, as $176\,\,$ Frodo's together according to Frodo's custom. Then they went out for a sniff $177\,$ of air, and glimpse of the stars, and then they went to bed. Frodo's party 178 Folco went home after lunch, but Pippin remained behind. Frodo was $179\,$ would go to Crickhollow, and might even get there first. For Frodo was going $180\,$ Lotho, turned up, much to Frodo's annoyance. 'Ours at last!' said Lobelia, 181 the night. Frodo did not offer her any tea. Frodo and look after his bit of garden'; an arrangement that was approved by 182183 'Our last meal at Bag End!' said Frodo, pushing back his chair. They 184 Frodo 185 Footsteps went away down the Hill. Frodo wondered vaguely why the fact 186 Pippin was sitting on his pack in the porch. Sam was not there. Frodo 187 'All aboard, Sam?' said Frodo. $188\,$ Frodo shut and locked the round door, and gave the key to Sam. 'Run 189 'Well, now we're off at last!' said Frodo. They shouldered their packs 190 Bag End. 'Good-bye!' said Frodo, looking at the dark blank windows. He

'You have seen Gollum?' exclaimed Frodo in amazement.

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'I am sure you have given me all the heaviest stuff,' said Frodo. 'I
    'Be kind to a poor old hobbit!' laughed Frodo. 'I shall be as thin as a
193 peeping among the trees, Frodo turned and waved a hand in farewell.
194 'I thought you liked walking in the dark,' said Frodo. 'But there is no
195 fast asleep. They set no watch; even Frodo feared no danger yet, for they
196\, The morning came, pale and clammy. Frodo woke up first, and found that
197 Frodo stripped the blankets from Pippin and rolled him over, and then
198 'I don't keep water in my pockets,' said Frodo. 'We thought you had
199 'You can come too,' said Frodo, 'and bring all the water-bottles.'
200\, 'Not that I ever heard,' said Pippin. Frodo was silent. He too was
201\, 'I don't know,' said Frodo. It came to me then, as if I was making it
202 Frodo, going out of your door," he used to say. "You step into the Road, and
203\, far. 'I wonder if that is Gandalf coming after us,' said Frodo; but even as
204\, far from the road. There they lay flat. Frodo hesitated for a second:
205\, When it reached the tree and was level with Frodo the horse stopped.
206\, A sudden unreasoning fear of discovery laid hold of Frodo, and he
207
    Frodo crawled to the edge of the road and watched the rider, until he
208
    'Well, I call that very queer, and indeed disturbing,' said Frodo to
    flat in the grass, and had seen nothing; so Frodo described the rider and 'There are some Men about,' said Frodo. 'Down in the Southfarthing they
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    'What do you mean?' said Frodo sharply, looking at him in astonishment.
212\, he says. I thought you were away with Mr. Frodo this morning. There's been a
213
    'The Gaffer can't be blamed anyway,' said Frodo. 'As a matter of fact I
    'I wish I had waited for Gandalf,' Frodo muttered. 'But perhaps it
214
    'I don't know, and I would rather not guess,' said Frodo. 'All right,
215
   cousin Frodo! You can keep your secret for the present, if you want to be
217
    'Yes, I think we will move on now,' said Frodo; 'but not on the road
218 Woodhall. 'That is the way for us,' said Frodo.
219
    and taught it to Frodo as they walked in the lanes of the Water -valley and
220
    'Hush!' said Frodo. 'I think I hear hoofs again.'
221
    'Don't let us go too far!' said Frodo. 'I don't want to be seen, but I
222 large tree-bole, while Frodo crept back a few yards towards the lane. It
223
    The sound of hoofs stopped. As Frodo watched he saw something dark pass
224 side to side. Frodo thought he heard the sound of snuffling. The shadow bent
225\, Once more the desire to slip on the Ring came over Frodo; but this time
226 darkness on the other side. Frodo breathed again.
227
    'Yes, it is Elves,' said Frodo. 'One can meet them sometimes in the
228
    'Listen! They are coming this way,' said Frodo. 'We have only to wait.'
229 singing in the fair elven-tongue, of which Frodo knew only a little, and the
230 was the song as Frodo heard it:
231 Elbereth!' said Frodo in amazement, 'Few of that fairest folk are ever seen
232 'Hail, Frodo!' he cried. 'You are abroad late. Or are you perhaps
233 'The meaning of it, fair people,' said Frodo, 'is simply that we seem
234\, 'And how do you know my name?' asked Frodo in return.
235 'Who are you, and who is your lord?' asked Frodo.
236 still in peace in Rivendell. Come now, Frodo, tell us what you are doing?
237 was speechless. 'I thank you indeed, Gildor Inglorion,' said Frodo bowing.
238 Elf-friend!' he said, bowing to Frodo. 'Come now with your friends and join
239 'Why? Where are you going?' asked Frodo.
240\, saved him from a fall. Sam walked along at Frodo's side, as if in a dream,
241 seemed to take no further notice of the hobbits. Frodo and his companions
242 'It seems to me good enough for a birthday-party,' said Frodo.
243\, Frodo sat, eating, drinking, and talking with delight; but his mind was
    gone, he came and sat curled up at Frodo's feet, where at last he nodded and
244
245\, closed his eyes. Frodo remained long awake, talking with Gildor.
246\, They spoke of many things, old and new, and Frodo questioned Gildor
247 flight of the Elves. At last Frodo asked the question that was nearest to
248\, more about Bilbo, and Frodo fell silent.
249
    'You do not ask me or tell me much that concerns yourself, Frodo,' said
250\, 'It is,' said Frodo; 'but I thought my going was a secret known only to
251 'The Enemy?' said Frodo. 'Then you know why I am leaving the Shire?'
252\, hints and warnings,' exclaimed Frodo. 'I knew that danger lay ahead, of
    'And it is also said,' answered Frodo: 'Go not to the Elves for
253
254 'I am deeply grateful,' said Frodo; 'but I wish you would tell me
255\, more of me! But my heart forbodes that, ere all is ended, you, Frodo son of
256\, 'But where shall I find courage?' asked Frodo. 'That is what I chiefly
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   Frodo felt sleep coming upon him, even as Gildor finished speaking. 'I
258 In the morning Frodo woke refreshed. He was lying in a bower made by a
259\, Frodo sat down beside Sam and began to eat. 'What is the plan for
260\, 'To walk to Bucklebury as quickly as possible,' answered Frodo, and
261 'Yes, probably,' said Frodo, not liking the reminder. 'But I hope to
262 'Not much - only hints and riddles,' said Frodo evasively. 'Did you ask
263 'We didn't discuss it,' said Frodo with his mouth full.
264 Frodo sharply. 'And now leave me in peace for a bit! I don't want to answer
265\, From Frodo's mind the bright morning - treacherously bright, he thought
266 'They are,' said Frodo. 'Do you like them still, now you have had a
267 Frodo looked at Sam rather startled, half expecting to see some outward
268 Frodo finished his breakfast in silence. Then standing up he looked
269 'We can cut straighter than the road anyway,' answered Frodo. 'The
270\, Frodo. 'And if you are supposed to be on the road, there is some chance that
    'That settles it!' said Frodo. 'Short cuts make delays, but inns make 'I will go along with you, Mr. Frodo,' said Sam (in spite of private
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273
    and fences. Frodo reckoned they had eighteen miles to go in a straight line.
    'Look!' he said, clutching Frodo by the arm. They all looked, and on
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    They at once gave up any idea of going back. Frodo led the way, and
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    'It is no good our starting to go in zig-zags,' said Frodo. 'That won't
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277 Frodo propped his back against the tree-trunk, and closed his eyes. Sam
278 Ho! Ho! Ho! they began again louder. They stopped short suddenly. Frodo
    'It was not bird or beast,' said Frodo. 'It was a call, or a signal --
280 behind them stood the high place where they had breakfasted. Frodo half
    'One trouble after another!' said Frodo, looking nearly as much alarmed
282 'I know,' said Frodo. 'But all the same,' he added with a shamefaced
283 Frodo and Sam stopped dead, but Pippin walked on a few paces. The gate
284 three halted in front of Frodo, bristling and growling.
285 about the dogs?' asked Frodo anxiously.
286 Here, Grip! Fang! Heel!' he cried. 'Heel, Wolf!' To the relief of Frodo and
287 Pippin introduced the other two to the farmer. 'Mr. Frodo Baggins,' he
288\, name Baggins the farmer started, and gave Frodo a sharp glance. For a moment
289 Frodo thought that the memory of stolen mushrooms had been aroused, and
290\, name. I recollect the time when young Frodo Baggins was one of the worst
291 Frodo sat for a moment looking at the fire, but his only thought was
292
   gone mixing yourself up with Hobbiton folk, Mr. Frodo. Folk are queer up
293
    Frodo said nothing: the shrewd guesses of the farmer were rather
294
    'Well, Mr. Frodo,' Maggot went on, 'I'm glad that you've had the sense
295 'Maybe you're right,' said Frodo, avoiding the farmer's eye and staring 296 'I was thinking so,' said Frodo. But we have got to try and get there; 297 'And so should we!' said Frodo. 'But we must be going at once, I'm
298 Frodo now accepted the invitation gratefully, to the relief of Pippin
299 seemed slower than a snail to Frodo. Beside him Pippin was nodding towards
300 'You'd better be hidden, Mr. Frodo,' said Sam anxiously. 'You get down
301\, Frodo sprang out of the waggon to greet him. 'So there you are at
302 you'll excuse me, Mr. Merry and Mr. Frodo and all, I'd best be turning for
303 dwindled into the foggy night. Suddenly Frodo laughed: from the covered
304\, his head, and for a moment had a passing wish that Mr. Frodo could have gone
305 'Look back, Mr. Frodo! Do you see anything?'
306\, 'Something that is following us,' said Frodo. 'But don't ask any more
307 'Thank goodness you don't keep any boats on the west -bank!' said Frodo.
308 'We had our supper early with Farmer Maggot,' said Frodo; 'but we could
309 It was some distance from the Brandywine to Frodo's new house at
310\, hedge. Frodo had chosen it, because it stood in an out-of-the-way corner of
311\, the windows were dark and shuttered. Frodo knocked on the door, and Fatty
312\, Frodo looked round. It did look like home. Many of his own favourite
    'Which order shall we go in?' said Frodo. 'Eldest first, or quickest
313
314 There was a terrific splash, and a shout of Whoa! from Frodo. It
315
    called. Frodo came out drying his hair.
316
    'They're mine!' said Frodo. 'Given to me by Mrs. Maggot, a queen among
317
    likings of Big People. A fact which partly explains young Frodo's long
    'We have all been scared,' said Pippin after a pause, in which Frodo
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319 'Black figures riding on black horses,' answered Pippin. 'If Frodo
320\, gave various supporting nods and exclamations. Frodo remained silent.
321 Maggot's voice. What do you make of it all, Frodo?'
322 'Cousin Frodo has been very close,' said Pippin. 'But the time has come
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    'That was only a guess,' said Frodo hastily. 'Maggot does not know
324 many strange things. But you can at least tell us, Frodo, whether you think
325 'I think, ' answered Frodo slowly, 'that it was a good guess, as far as
326 'Well!' said Frodo at last, sitting up and straightening his back, as
327 'What do you mean?' said Frodo, looking at him anxiously. 'Just this,
328 my dear old Frodo: you are miserable, because you don't know how to say
329 Frodo opened his mouth and shut it again. His look of surprise was so
330 comical that they laughed. 'Dear old Frodo!' said Pippin. 'Did you really
331 'Good heavens!' said Frodo. 'I thought I had been both careful and
332\, 'But I must go,' said Frodo. 'It cannot be helped, dear friends. It is
333 'My dear and most beloved hobbits!' said Frodo deeply moved. 'But I
334\, The Ring!' said Frodo, now completely amazed.
335 'Go on!' said Frodo faintly.
336\, must be the only one in the Shire, besides you Frodo, that has ever seen the
    'You have read his book!' cried Frodo. 'Good heavens above! Is nothing
337
338
    Frodo?'
339
    'Where is he?' said Frodo, looking round, as if he expected a masked
340\, 'Sam!' cried Frodo, feeling that amazement could go no further, and
    to you, Mr. Frodo, nor to Mr. Gandalf for that matter. He has some sense,
341
^342 'But it does not seem that I can trust anyone,' said Frodo. Sam looked ^343 word. We are your friends, Frodo. Anyway: there it is. We know most of what
344
   'I don't deny it,' said Frodo, looking at Sam, who was now grinning. 'I
345 'Good! That's settled. Three cheers for Captain Frodo and company!'
346 'Very good!' said Frodo. 'But in that case there are a lot of things to
347 'I don't know,' answered Frodo. 'I fear those Black Riders, and I am
348 'It seems to have been a very efficient conspiracy,' said Frodo. 'But
349 Frodo sat for a while in thought. 'I have made up my mind,' he said
350 'Not quite,' said Merry. It sounds very desperate, but I believe Frodo
351\, when the fit takes them. We have a private entrance. Frodo went in once,
352\, Fond as he was of Frodo, Fatty Bolger had no desire to leave the Shire,
353\, had even brought along some old clothes of Frodo's to help him in playing
354 'Excellent!' said Frodo, when he understood the plan. 'We could not
355\, When at last he had got to bed, Frodo could not sleep for some time.
356\, Frodo woke suddenly. It was still dark in the room. Merry was standing
    'All right! What is it?' said Frodo, still shaken and bewildered.
357
358 Here Fatty Bolger halted. 'Good-bye, Frodo!' he said. 'I wish you were
359 lucky,' said Frodo. 'Tell Gandalf to hurry along the East Road: we shall
360\, that path,' Frodo said to him. 'Don't let us lose one another, or forget
361\, Frodo began to wonder if it were possible to find a way through, and if
362\, their ears. Frodo tried to sing a song to encourage them, but his voice sank
363\, settling steadily on Frodo's heart, and he regretted now with every step
364 Frodo felt his chin go down and his head nod. Just in front of him
365 Pippin fell forward on to his knees. Frodo halted. 'It's no good,' he heard
366\, Frodo did not like the sound of this. 'Come on!' he cried. 'We can't
367 Suddenly Frodo himself felt sleep overwhelming him. His head swam.
368\, Frodo lay for a while fighting with the sleep that was overpowering
369\, He rushed back to the bank. Frodo was in the water close to the edge,
370 'You were dreaming I expect, Mr. Frodo,' said Sam. 'You shouldn't sit
371 'What about the others?' Frodo asked. 'I wonder what sort of dreams
372 Frodo and Sam beat first upon the tree-trunk where Pippin had lain.
373 'What a foul thing to happen!' cried Frodo wildly. 'Why did we ever
374\, 'I suppose we haven't got an axe among our luggage, Mr. Frodo?' asked
375\, 'I brought a little hatchet for chopping firewood,' said Frodo. 'That
376 'We might,' said Frodo doubtfully. 'We might succeed in roasting Pippin
377
    'Who? What?' shouted Frodo, rushing round to the other side of the
378\, little fire and stamped out the sparks. But Frodo, without any clear idea of
379\, Half hopeful and half afraid of some new danger, Frodo and Sam now both
    Frodo and Sam stood as if enchanted. The wind puffed out. The leaves
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381
    'Help!' cried Frodo and Sam running towards him with their hands
382
    'My friends are caught in the willow-tree,' cried Frodo breathlessly.
383\, 'Come dear folk!' she said, taking Frodo by the hand. Faugh and be
384\, smiled. 'Fair lady Goldberry!' said Frodo at last, feeling his heart moved
385 'Fair lady!' said Frodo again after a while. 'Tell me, if my asking
386\, Frodo looked at her questioningly. 'He is, as you have seen him,' she
387 supper. Sleep gathered on their eyelids. At last Frodo spoke:
388\, He fell silent again; but Frodo could not help asking one more
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In the dead night, Frodo lay in a dream without light. Then he saw the
390\, of rock, pierced by a dark arch like a great gate. It seemed to Frodo that
   'Black Riders!' thought Frodo as he wakened, with the sound of the hoofs
392 They leapt up refreshed. Frodo ran to the eastern window, and found
393 hobbits listened with delight; and Frodo was glad in his heart, and blessed
394\, be seen all round the house but falling water. Frodo stood near the open
395 Man Willow, and Frodo learned now enough to content him, indeed more
396 Frodo could not tell. Ele did not feel either hungry or tired, only filled
397 fashion, news had reached him from Gildor concerning the flight of Frodo.
398\, Frodo found himself telling him more about Bilbo and his own hopes and fears
399\, story: and Frodo, to his own astonishment, drew out the chain from his
400\, vanished with a flash. Frodo gave a cry - and Tom leaned forward and handed
401\, Frodo looked at it closely, and rather suspiciously (like one who has
402\, weighed the same: for that Ring had always seemed to Frodo to weigh
403 an exclamation. Frodo was delighted (in a way): it was his own ring all
404\, his shining eyes. 'Hey! Come Frodo, there! Where be you a-going? Old Tom
    Frodo laughed (trying to feel pleased), and taking off the Ring he came
405
406
    them, he could not tell which, Frodo heard a sweet singing running in his
    slope, when suddenly Frodo stopped.
407
   shines!' And to Frodo she said: 'Farewell, Elf-friend, it was a merry
408
409 But Frodo found no words to answer. He bowed low, and mounted his pony,
410 'Splendid!' said Frodo. 'If we make as good going this afternoon as we
411 wandering in different directions they went in file, with Frodo leading. Sam
412 to stretch on endlessly. Suddenly Frodo saw a hopeful sign. On either side
413 'Hoy! Frodo! Hoy!' It was away eastward, on his left as he stood under the
414 and far ahead and high above him. 'Frodo! Hoy!' came the thin voices out of
415 'No!' said Frodo; but he did not run away. His knees gave, and he fell
416 hobbit, wailing for some final and desperate danger to make it grow. Frodo
417 warmth for which it hungered. Frodo was chilled to the marrow. After a while
418 At first Frodo felt as if he had indeed been turned into stone by the
419 Frodo fell forward over Merry, and Merry's face felt cold. All at once
420 There was a sudden deep silence, in which Frodo could hear his heart
421 door -like opening appeared at the end of the chamber beyond Frodo's feet;
422 faces of the three hobbits lying beside Frodo. They did not stir, but the
    'Come, friend Frodo!' said Tom. 'Let us get out on to clean grass! You
424
    Together they carried out Merry, Pippin, and Sam. As Frodo left the
425
    To Frodo's great joy the hobbits stirred, stretched their arms, rubbed
426
    first at Frodo, and then at Tom standing large as life on the barrow-top
    'What am I saying? I have been dreaming. Where did you get to, Frodo?' I thought that I was lost,' said Frodo; 'but I don't want to speak of
427
428
429 Frodo saw him running away southwards along the green hollow between
430 asked Frodo.
   Though Frodo looked about him on every side he saw no sign of the great
431
432\, be seen. 'Well, here we are again at last!' said Frodo. 'I suppose we
    'It may be all we could wish,' said Frodo; 'but it is outside the Shire
434 It was dark, and white stars were shining, when Frodo and his
   'We are making for the inn here,' answered Frodo. 'We are journeying
436 place to discuss them,' said Frodo, not liking the look of the man or the
437 He wished them good night, and they said no more; but Frodo could see
438
   'What's wrong with the inn?' said Frodo. 'Tom Bombadil recommended it.
439 yard they climbed up the steps. Frodo went forward and nearly bumped into a
440 'Can we--' began Frodo.
441 'Mr. Took and Mr. Brandybuck,' said Frodo; 'and this is Sam Gamgee. My
442 talk) that Frodo, Pippin, and Sam decided to join the company. Merry said it
443 large and mixed, as Frodo discovered, when his eyes got used to the light.
444 could not imagine sharing a name without being related, they took Frodo to
445
    The Bree-hobbits were, in fact, friendly and inquisitive, and {\tt Frodo}
446\, At this a chorus of voices broke out. If Frodo had really wanted to
    go for further information. But after a time, as Frodo did not show any sign
447
    doings in the Shire. Frodo did not prove very communicative, and he soon
448
449 Frodo a little uneasy. One of the Bree-landers, who seemed to have been in
450\, Suddenly Frodo noticed that a strange-looking weather-beaten man,
   'Who is that?' Frodo asked, when he got a chance to whisper to Mr.
451
452 Frodo found that Strider was now looking at him, as if he had heard or
453\, nod, he invited Frodo to come over and sit by him. As Frodo drew near be
   'He did,' said Frodo stiffly. He felt far from comfortable under the
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455\, smile, seeing Frodo's glance. 'And there have been even stranger travellers
456 through Bree lately,' he went on, watching Frodo's face.
457 Frodo returned his gaze but said nothing; and Strider made no further
458 Frodo became aware that the ridiculous young Took, encouraged by his success
459 Frodo was annoyed. It was a harmless enough tale for most of the local
460\, Frodo fidgeted, wondering what to do. Pippin was evidently much
461 their danger. Frodo had a sudden fear that in his present mood he might even
462 Frodo jumped up and stood on a table, and began to talk. The attention
463 of Pippin's audience was disturbed. Some of the hobbits looked at Frodo and
464 Frodo suddenly felt very foolish, and found himself (as was his habit
465\, For a moment Frodo stood gaping. Then in desperation he began a
466\, probably why it came into Frodo's mind just then. Here it is in full. Only a
467
   There was loud and long applause. Frodo had a good voice, and the song
468 They made Frodo have another drink, and then begin his song again,
469 quick at picking up words. It was now Frodo's turn to feel pleased with
470 Frodo felt a fool. Not knowing what else to do, he crawled away under
471
    his thoughts. Frodo leaned back against the wall and took off the Ring. How
472
    'I don't know what you mean,' said Frodo, annoyed and alarmed.
    \ensuremath{^{\prime}}\xspace What about? \ensuremath{^{\prime}}\xspace asked Frodo, ignoring the sudden use of his proper name.
473
    Frodo in the eye. 'You may hear something to your advantage.'
474
    'Very well,' said Frodo, trying to appear unconcerned. 'I'll talk to
475
476
    'Of course there's a mistake!' said Frodo. 'I haven't vanished. Here I
477 or two gave Frodo a black look and departed muttering among themselves.
478 good night to the landlord, but not to Frodo and his friends. Before long no
   'I am very sorry to have caused any trouble,' said Frodo. 'It was quite
   'Certainly!' said Frodo; but his heart sank. He wondered how many
   Frodo, Pippin, and Sam made their way back to the parlour. There was no
482 Frodo. 'What have you to say?'
483 'What do you mean?' asked Frodo sharply.
484
    'And what will that be, pray?' said Frodo. He suspected now that he had
485\, if he guessed Frodo's thoughts. 'Just this: you must take me along with you,
    'Oh, indeed!' replied Frodo, surprised, but not much relieved. 'Even if
486
487
    'Go on then!' said Frodo. 'What do you know?'
488
    'I don't see what interest my name has for any one in Bree,' said Frodo
    I was looking for a Hobbit called Frodo Baggins. I wanted to find \ensuremath{\mathsf{him}}
489
    'Now, don't mistake me!' he cried, as Frodo rose from his seat, and Sam
491
   There was a silence. At last Frodo spoke to Pippin and Sam: 'I ought to
492
    'Do you think he ' began Frodo.
493
    altogether like mysterious vagabonds of my sort.' Frodo gave him a puzzled
    'It was sheer accident!' interrupted Frodo.
494
495 'Hardly more than it was already,' said Frodo. 'I knew these horsemen
496 said Frodo, still determined not to understand Strider's hints.
497
   There was a heavy silence. Frodo made no answer, his mind was confused
    'With your leave, Mr. Frodo, I'd say no! This Strider here, he warns
498
499 but turned his keen eyes on Frodo. Frodo caught his glance and looked away.
500 'And what has that got to do with me?' asked Frodo.
501 'Indeed! Let's have it then!' said Frodo, unwisely interrupting.
502 'He said it? And who was he?' asked Frodo eagerly.
503 'Well, what have you done?' said Frodo, getting impatient with the slow
504 'A letter for me from Gandalf!' cried Frodo.
505 'It is,' said Frodo, 'and you had better give me that letter at once,
506 'What do you mean?' asked Frodo.
507
   'He's here with my leave,' said Frodo. 'He came to offer me his help.'
508 'I'm sorry I can't explain it all,' answered Frodo. 'I am tired and
509\, is,' said Frodo. 'Are you still willing to help me?' 'I am,' said Mr.
510
    'Well, we can only hope the Riders won't come back yet,' said Frodo.
511
    'In any case we must be called at dawn,' said Frodo. 'We must get off
    'I don't know,' said Frodo with sudden anxiety. They had forgotten all
512
    'Well?' said Strider. 'When are you going to open that letter?' Frodo
513
514 Dear Frodo,
   Frodo read the letter to himself, and then passed it to Pippin and Sam.
515
516 Frodo turned and looked at him thoughtfully, wondering about Gandalf s
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There was a long silence. At last Frodo spoke with hesitation. 'I

520 Gandalf's absence, I mean?' asked Frodo.

'Did the verses apply to you then?' asked Frodo. 'I could not make out

'When did you last see Gandalf?' asked Frodo. 'Do you know where he is,

517

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521 alarm for a moment before he gasped: 'I have seen them, Frodo! I have seen
   'Black Riders!' cried Frodo. 'Where?'
523 started, noticing the stranger for the first time. 'Go on!' said Frodo.
524 'We seem to have enemies all round,' said Frodo. 'What are we to do?'
525 While Strider was gone, Frodo gave Merry a rapid account of all that
526 chair against the door and shut the window. Peering out, Frodo saw that the
527 blanket. 'Very ridiculous of you, Frodo! But I wish I had been there to see.
528 In the early night Frodo woke from deep sleep, suddenly, as if some
529 Frodo soon went to sleep again; but his dreams were again troubled with
530\, Frodo was crushed by the news. How could they hope to reach Rivendell
531 thoughtfully, as if he guessed what Frodo had in mind. We should not go
532 'Can't anything be done, Mr. Butterbur?' asked Frodo. 'Can't we get a
533 'Bill Ferny?' said Frodo. 'Isn't there some trick? Wouldn't the beast
534 Bree was buzzing with excitement. Frodo's vanishing trick; the appearance of
535\, once more,' said Frodo. 'I should like nothing better than to stay in your
536 he stared at shut their mouths and drew away. He walked in front with Frodo;
537
   near to the further gate, Frodo saw a dark ill-kept house behind a thick
538
   As Frodo lay, tired but unable to close his eyes, it seemed to him that
539 Frodo lay down again, but for a long while he could still see the white
   'What do you mean?' asked Frodo.
540
    'What do you advise us to do?' asked Frodo.
541
542 Pippin declared that Frodo was looking twice the hobbit that he had been.
543 'Very odd,' said Frodo, tightening his belt, 'considering that there is
544 crown of the hill; Frodo and Merry followed, tired and breathless. The last
545\, On the flat under-side Frodo saw some scratches: 'There seems to he a
546\, mean,' said Frodo 'It would be a great comfort to know that he was on the
547 'A fortnight!' said Frodo. 'A lot may happen in that time.'
548 In that lonely place Frodo for the first time fully realized his
549 pulling Frodo down beside him. Merry threw himself alongside.
550\, specks, but neither Frodo nor Merry could make out their shapes for certain;
551 --More--
552 Files Proccessed: 1
553 Bytes Processed: 1020227
554 nikopj@s15:~/Documents/OS/hw4$ ./cgm.out Frodo lotr1.txt lotr2.txt lotr3.txt
555\, to tackle the journey of Frodo to Mordor. These chapters, eventually to
556\, importance. But in the days of Bilbo, and of Frodo his heir, they suddenly
   inhabited by large families. (Bilbo and Frodo Baggins were as bachelors very
558 revealed to no one, not even to Frodo his favourite 'nephew'. And he still
559 from notes by Frodo or Samwise, both of whom learned the truth, though they
560\, and Frodo; and no one else in the Shire knew of its existence, or so he
561 believed. Only to Frodo did he show the account of his Journey that he was
562 to Rivendell. Frodo brought it back to the Shire, together with many loose
563 living and written. But since they were little used by Frodo, being almost
564 The eldest of these, and Bilbo's favourite, was young Frodo Baggins.
565 When Bilbo was ninety-nine, he adopted Frodo as his heir, and brought him to
566\, dashed. Bilbo and Frodo happened to have the same birthday, September
567 'You had better come and live here, Frodo my lad,' said Bilbo one day; 'and
568\, time Frodo was still in his tweens, as the hobbits called the irresponsible
569 and Frodo was going to be thirty-three, 33) an important number: the date of
570\, were on very friendly terms with Bilbo and Frodo. They lived on the Hill
571 'But what about this Frodo that lives with him?' asked Old Noakes of
572\, wonder that trouble came of it, I say. But be that as it may, Mr. Frodo is
573 Frodo is his first and second cousin, once removed either way, as the saying
574\, were drownded, and poor Mr. Frodo only a child and all. ^{\circ}
575 looking further for the cause of trouble. Anyway: there was this Mr. Frodo
576 Bilbo and Frodo were related, with the addition of a few special unrelated
   detested Frodo, but so magnificent was the invitation card, written in
577
578 Frodo. He comes of age and into his inheritance today. Some perfunctory
579 clapping by the elders; and some loud shouts of 'Frodo! Frodo! Jolly old
580 Frodo,' from the juniors. The Sackville-Bagginses scowled, and wondered what
   He called loudly to Frodo to send the wine round again.
581
582\, Frodo was the only one present who had said nothing. For some time he
583 present; but the Sackville-Bagginses had already departed in wrath. Frodo
584\, fine chain, and then sealed it, and addressed it to Frodo. At first he put
585\, 'Oh, they may, in years to come. Frodo has read some already, as far as
586 it has gone. You'll keep an eye on Frodo, won't you?'
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587
   leave it behind. Stop possessing it. Give it to Frodo, and I will look after
588\, 'Very well,' said Bilbo, 'it goes to Frodo with all the rest.' He drew
589\, mantelpiece. It will be safe enough there, till Frodo comes. I shall wait
590\, Frodo came in soon afterwards, and found him sitting in the dark, deep
591\, said Frodo. 'But I knew in my heart that he really meant to go. He always
592 Frodo took the envelope from the mantelpiece, and glanced at it, but
593 'The ring!' exclaimed Frodo. 'Has he left me that? I wonder why. Still,
594 As master of Bag End Frodo felt it his painful duty to say good-bye to
595\, but Frodo would only say no doubt everything will be cleared up in the
596\, Frodo was waiting on the step, smiling, but looking rather tired and
597 surviving female relative of Bilbo and Frodo; she was ninety-nine, and had
598 There was plenty of everything left for Frodo. And, of course, all the
599 Frodo had a very trying time that afternoon. A false rumour that the
600\, In the middle of the commotion the Sackville-Bagginses arrived. Frodo
601 on things. When Otho loudly demanded to see Frodo, Merry bowed politely.
602 they were shown into the study. Frodo was sitting at a table with a lot of
603 unlabelled things. When Frodo replied that only the things specially
604\, Otho would have been Bilbo's heir, but for the adoption of Frodo. He 605\, Spoons? Fiddlesticks!' He snapped his fingers under Frodo's nose and slumped
606\, off. But Lobelia was not so easily got rid of. A little later Frodo came out
   'Did you hear that, Merry? That was an insult, if you like,' said Frodo
607
608 cellars. Frodo also had a tussle with young Sancho Proudfoot (old Odo
609 When he had overcome Sancho and pushed him out, Frodo collapsed on
610 'If you don't let me in, Frodo, I shall blow your door right down your
   'My dear Gandalf! Half a minute!' cried Frodo, running out of the room
611
612 ring, Frodo ! In fact, it is partly about that I have come to say a last
613 'Oh, not what he told the dwarves and put in his book,' said Frodo. 'He
614\, us, Frodo," he said; "but they are not to go any further. It's mine
615 'I don't understand,' said Frodo.
616 'At once!' cried Frodo. 'Why, I thought you were staying on for at
   'Some people!' exclaimed Frodo. 'You mean Otho and Lobelia. How
617
618\, Frodo saw him to the door. He gave a final wave of his hand, and walked
619 off at a surprising pace; but Frodo thought the old wizard looked unusually
620\, in, and his cloaked figure quickly vanished into the twilight. Frodo did not
621
   'If only that dratted wizard will leave young Frodo alone, perhaps
622 appearance the wizard did leave Frodo alone, and he did settle down, but the
623 Some people were rather shocked; but Frodo kept up the custom of giving
624 name was Meriadoc, but that was seldom remembered). Frodo went tramping
625 As time went on, people began to notice that Frodo also showed signs of
626\, said; but it was not until Frodo approached the usually more sober age of
627 Frodo himself, after the first shock, found that being his own master
628 suddenly befallen Bilbo. Frodo began to feel restless, and the old paths
629\, years, Frodo gathered all the news he could. Elves, who seldom walked in the
630\, hobbits asked no more. But now Frodo often met strange dwarves of far
631 Frodo's fiftieth year, showed that even in the comfortable heart of the
632 and Frodo's cracking. If that's where you get your news from, you'll never
633 Frodo a brief visit, and after taking a good look at him he went off again.
634 interested in small news about Frodo's health and doings.
635 Then suddenly his visits had ceased. It was over nine years since Frodo
636 Frodo welcomed his old friend with surprise and great delight. They
637 'Ah well eh?' said Gandalf. 'You look the same as ever, Frodo!'
638\, 'So do you,' Frodo replied; but secretly he thought that Gandalf looked
639 Next morning after a late breakfast, the wizard was sitting with Frodo
640\, He was smoking now in silence, for Frodo was sitting still, deep in
   'A mortal, Frodo, who keeps one of the Great Rings, does not die, but
641
    'How terrifying!' said Frodo. There was another long silence. The sound
642
    'How long have you known this?' asked Frodo at length. 'And how much
643
644
    {\tt 'Yes} , he warned me of that in his last letter,' said Frodo, 'so I have
645\, 'How long have you known all this?' asked Frodo again.
646 Frodo. But if you mean "known about this ring", well, I still do not know,
    'Who is he?' asked Frodo. I have never heard of him before.'
647
648\, 'There wasn't any permanent harm done, was there?' asked Frodo
649 Frodo shuddered. 'But why should we be?' he asked. 'And why should he
   'Revenge?' said Frodo. 'Revenge for what? I still don't understand what
650
651\, Frodo took it from his breeches-pocket, where it was clasped to a chain
652\, wizard. It felt suddenly very heavy, as if either it or Frodo himself was in
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653
    'No,' said Frodo. 'There are none. It is quite plain, and it never
654 'Well then, look!' To Frodo's astonishment and distress the wizard
655\, threw it suddenly into the middle of a glowing corner of the fire. Frodo
656\, 'Wait!' he said in a commanding voice, giving Frodo a quick look from
657 the hearth with the tongs, and at once picked it up. Frodo gasped.
658 It is quite cool,' said Gandalf. 'Take it!' Frodo received it on his
659\, As Frodo did so, he now saw fine lines, finer than the finest
660\, I cannot read the fiery letters,' said Frodo in a quavering voice.
661 Frodo sat silent and motionless. Fear seemed to stretch out a vast
662 'I wish it need not have happened in my time,' said Frodo.
663 time that is given, us. And already, Frodo, our time is beginning to look
664\, 'And this is the dreadful chance, Frodo. He believed that the One had
665
    'Why, why wasn't it destroyed?' cried Frodo. 'And how did the Enemy
    'Gollum!' cried Frodo. 'Gollum? Do you mean that this is the very
666
   distantly,' said Frodo with some heat. 'What an abominable notion!'
667
668
    'Yes,' said Frodo. 'Though other folks besides hobbits ask riddles, and
    'What do you mean?' said Frodo. 'Surely the Ring was his precious and
669
    'You ought to begin to understand, Frodo, after all you have heard,'
670
   'A Ring of Power looks after itself, Frodo. It may slip off
671
672 aside. It was not Gollum, Frodo, but the Ring itself that decided things.
    'What, just in time to meet Bilbo?' said Frodo. 'Wouldn't an Ore have
673
674
    'There was more than one power at work, Frodo. The Ring was trying to
675\, It is not,' said Frodo. "Though I am not sure that I understand you.
676 Gandalf looked at Frodo, and his eyes glinted. I knew much and I have
677
   asked Frodo, interrupting. 'Just now in this room, of course,' answered the
    'You have seen Gollum?' exclaimed Frodo in amazement.
679
    'But how did he find that out?' asked Frodo.
    'Is that where you found him?' asked Frodo.
680
681
   'Then why didn't he track Bilbo further?' asked Frodo. 'Why didn't he
682\, I made a great mistake. Yes, Frodo, and not the first; though I fear it may
683\, A heavy silence fell in the room. Frodo could hear his heart beating.
684\, out where it lies. Indeed, Frodo, I fear that he may even think that the
685
    'But this is terrible!' cried Frodo. 'Far worse than the worst that \boldsymbol{I}
686\, without need. And he has been well rewarded, Frodo. Be sure that he took so
    'I am sorry,' said Frodo. 'But I am frightened; and I do not feel any
687
    'No, and I don't want to,' said Frodo. I can't understand you. Do you
689
    'All the same,' said Frodo, 'even if Bilbo could not kill Gollum, \ensuremath{\mathrm{I}}
690 'Of course, my dear Frodo, it was dangerous for you; and that has
   cried Frodo again. If you had warned me, or even sent me a message, I would
691
692 Frodo drew the Ring out of his pocket again and looked at it. It now
693
    gold looked very fair and pure, and Frodo thought how rich and beautiful was
694 Gandalf laughed grimly. You see? Already you too, Frodo, cannot easily
    'I do really wish to destroy it!' cried Frodo. 'Or, well, to have it
695
696\, outside whistling. 'And now,' said the wizard, turning back to Frodo, 'the
697 Frodo's shoulder. 'I will help you bear this burden, as long as It is yours
698 was watching Frodo intently. Frodo gazed fixedly at the red embers on the
699 'No!' answered Frodo, coming back to himself out of darkness, and
700\, 'I hope so,' said Frodo. 'But I hope that you may find some other
701 'My dear Frodo!' exclaimed Gandalf. 'Hobbits really are amazing
702 Suddenly he stopped as if listening. Frodo became aware that all was
703 'Mr. Frodo, sir!' cried Sam quaking. 'Don't let him hurt me, sir! Don't
704 'He won't hurt you,' said Frodo, hardly able to keep from laughing,
705 'So you heard that Mr. Frodo is going away?'
706 'It can't be helped, Sam,' said Frodo sadly. He had suddenly realized
707 punish you properly for listening. You shall go away with Mr. Frodo!'
708\, or three weeks had passed, and still Frodo made no sign of getting ready to
    'What about the autumn, on or after Our Birthday?' asked Frodo. 'I
709
710\, He looked at Frodo and smiled. 'Very well,' he said. 'I think that will
    'As for where I am going,' said Frodo, 'it would be difficult to give
711
712
    Frodo. 'For where am I to go? And by what shall I steer? What is to be my
    'No indeed!' said Frodo. 'But in the meantime what course am I to
713
714 'Rivendell!' said Frodo. 'Very good: I will go east, and I will make
715 forgotten for more important matters: Mr. Frodo was selling Bag End, indeed
716\, Just why Mr. Frodo was selling his beautiful hole was even more
717 hints of Mr. Baggins himself - that Frodo's money was running out: he was
718 no doubt about the fact: Frodo Baggins was going back to Buckland.
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719
    the end of June, soon after Frodo's plan had been finally arranged, he
720 He spoke lightly, but it seemed to Frodo that he looked rather worried.
   At first Frodo was a good deal disturbed, and wondered often what
722 Autumn was well under way before Frodo began to worry about Gandalf
723 word. Bag End began to be busy. Some of Frodo's friends came to stay and
724 conveying the furniture and goods that Frodo had not sold to his new home,
725 by way of the Brandywine Bridge. The next day Frodo became really anxious,
726 Gandalf did not appear. In the evening Frodo gave his farewell feast: it was
727 good wine: Frodo's wine had not been included in the sale to the
728 claws on it, at any rate I have found a good home for this!' said Frodo, as
729 Frodo's together according to Frodo's custom. Then they went out for a sniff
730\, of air, and glimpse of the stars, and then they went to bed. Frodo's party
731 Folco went home after lunch, but Pippin remained behind. Frodo was
732\, would go to Crickhollow, and might even get there first. For Frodo was going
733 Lotho, turned up, much to Frodo's annoyance. 'Ours at last!' said Lobelia,
734 the night. Frodo did not offer her any tea.
735
    Frodo and look after his bit of garden'; an arrangement that was approved by
736
    'Our last meal at Bag End!' said Frodo, pushing back his chair. They
737
738 Footsteps went away down the Hill. Frodo wondered vaguely why the fact
739 Pippin was sitting on his pack in the porch. Sam was not there. Frodo
740\, 'All aboard, Sam?' said Frodo.
741 Frodo shut and locked the round door, and gave the key to Sam. 'Run
742 'Well, now we're off at last!' said Frodo. They shouldered their packs
743 Bag End. 'Good-bye!' said Frodo, looking at the dark blank windows. He
    'I am sure you have given me all the heaviest stuff,' said Frodo. 'I
745 'Be kind to a poor old hobbit!' laughed Frodo. 'I shall be as thin as a
746 peeping among the trees, Frodo turned and waved a hand in farewell.
747 'I thought you liked walking in the dark,' said Frodo. 'But there is no
748 fast asleep. They set no watch; even Frodo feared no danger yet, for they
749 The morning came, pale and clammy. Frodo woke up first, and found that
750 Frodo stripped the blankets from Pippin and rolled him over, and then
    'I don't keep water in my pockets,' said Frodo. 'We thought you had
751
752
    'You can come too,' said Frodo, 'and bring all the water-bottles.'
753
    'Not that I ever heard,' said Pippin. Frodo was silent. He too was
    \mbox{'I don't know,'} said Frodo. It came to me then, as if I was making it
755\, Frodo, going out of your door," he used to say. "You step into the Road, and
756\, far. 'I wonder if that is Gandalf coming after us,' said Frodo; but even as
757
    far from the road. There they lay flat. Frodo hesitated for a second:
758 When it reached the tree and was level with Frodo the horse stopped.
759\, A sudden unreasoning fear of discovery laid hold of Frodo, and he
760\, Frodo crawled to the edge of the road and watched the rider, until he
    'Well, I call that very queer, and indeed disturbing,' said Frodo to
761
762 flat in the grass, and had seen nothing; so Frodo described the rider and
763 'There are some Men about,' said Frodo. 'Down in the Southfarthing they
764\, 'What do you mean?' said Frodo sharply, looking at him in astonishment.
765\, he says. I thought you were away with Mr. Frodo this morning. There's been a
766\, 'The Gaffer can't be blamed anyway,' said Frodo. 'As a matter of fact I
767 'I wish I had waited for Gandalf,' Frodo muttered. 'But perhaps it
768 'I don't know, and I would rather not guess,' said Frodo. 'All right,
769 cousin Frodo! You can keep your secret for the present, if you want to be
770 'Yes, I think we will move on now,' said Frodo; 'but not on the road
771\, Woodhall. 'That is the way for us,' said Frodo.
772 and taught it to Frodo as they walked in the lanes of the Water -valley and
773
    'Hush!' said Frodo. 'I think I hear hoofs again.'
774
    'Don't let us go too far!' said Frodo. 'I don't want to be seen, but I
    large tree-bole, while Frodo crept back a few yards towards the lane. It
775
    The sound of hoofs stopped. As Frodo watched he saw something dark pass
776
    side to side. Frodo thought he heard the sound of snuffling. The shadow bent
777
    Once more the desire to slip on the Ring came over Frodo; but this time
779
    darkness on the other side. Frodo breathed again.
    'Yes, it is Elves,' said Frodo. 'One can meet them sometimes in the
780
    'Listen! They are coming this way,' said Frodo. 'We have only to wait.'
781
782\, singing in the fair elven-tongue, of which Frodo knew only a little, and the
783\, was the song as Frodo heard it:
784 Elbereth!' said Frodo in amazement, 'Few of that fairest folk are ever seen
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785
    'Hail, Frodo!' he cried. 'You are abroad late. Or are you perhaps
786\, 'The meaning of it, fair people,' said Frodo, 'is simply that we seem
787 'And how do you know my name?' asked Frodo in return.
788 'Who are you, and who is your lord?' asked Frodo.
789 still in peace in Rivendell. Come now, Frodo, tell us what you are doing?
790 was speechless. 'I thank you indeed, Gildor Inglorion,' said Frodo bowing.
791 Elf-friend!' he said, bowing to Frodo. 'Come now with your friends and join
792 'Why? Where are you going?' asked Frodo.
793 saved him from a fall. Sam walked along at Frodo's side, as if in a dream,
794 seemed to take no further notice of the hobbits. Frodo and his companions
795\, 'It seems to me good enough for a birthday-party,' said Frodo.
796 Frodo sat, eating, drinking, and talking with delight; but his mind was
797 gone, he came and sat curled up at Frodo's feet, where at last he nodded and
798 closed his eyes. Frodo remained long awake, talking with Gildor.
799 They spoke of many things, old and new, and Frodo questioned Gildor
800 flight of the Elves. At last Frodo asked the question that was nearest to
801
   more about Bilbo, and Frodo fell silent.
    'You do not ask me or tell me much that concerns yourself, Frodo,' said
802
803 'It is,' said Frodo; 'but I thought my going was a secret known only to
   'The Enemy?' said Frodo. 'Then you know why I am leaving the Shire?'
804
805\, hints and warnings,' exclaimed Frodo. 'I knew that danger lay ahead, of
    'And it is also said,' answered Frodo: 'Go not to the Elves for
806
   'I am deeply grateful,' said Frodo; 'but I wish you would tell me
807
808\, more of me! But my heart forbodes that, ere all is ended, you, Frodo son of
   'But where shall I find courage?' asked Frodo. 'That is what I chiefly
810 Frodo felt sleep coming upon him, even as Gildor finished speaking. 'I
811 In the morning Frodo woke refreshed. He was lying in a bower made by a
812 Frodo sat down beside Sam and began to eat. 'What is the plan for
813 'To walk to Bucklebury as quickly as possible,' answered Frodo, and
814 'Yes, probably,' said Frodo, not liking the reminder. 'But I hope to
815
    'Not much - only hints and riddles,' said Frodo evasively. 'Did you ask
816 'We didn't discuss it,' said Frodo with his mouth full.
817 Frodo sharply. 'And now leave me in peace for a bit! I don't want to answer
818 From Frodo's mind the bright morning - treacherously bright, he thought
819
    'They are,' said Frodo. 'Do you like them still, now you have had a
820\, Frodo looked at Sam rather startled, half expecting to see some outward
821
   Frodo finished his breakfast in silence. Then standing up he looked
822
    'We can cut straighter than the road anyway,' answered Frodo. 'The \,
823 Frodo. 'And if you are supposed to be on the road, there is some chance that
    'That settles it!' said Frodo. 'Short cuts make delays, but inns make
824
    'I will go along with you, Mr. Frodo,' said Sam (in spite of private
825
826 and fences. Frodo reckoned they had eighteen miles to go in a straight line.
    'Look!' he said, clutching Frodo by the arm. They all looked, and on
827
828 They at once gave up any idea of going back. Frodo led the way, and
    'It is no good our starting to go in zig-zags,' said Frodo. 'That won't
830\, Frodo propped his back against the tree-trunk, and closed his eyes. Sam
831 Ho! Ho! Ho! they began again louder. They stopped short suddenly. Frodo
    'It was not bird or beast,' said Frodo. 'It was a call, or a signal --
833 behind them stood the high place where they had breakfasted. Frodo half
834 'One trouble after another!' said Frodo, looking nearly as much alarmed
835\, 'I know,' said Frodo. 'But all the same,' he added with a shamefaced
836\, Frodo and Sam stopped dead, but Pippin walked on a few paces. The gate
837 three halted in front of Frodo, bristling and growling.
838 about the dogs?' asked Frodo anxiously.
839 Here, Grip! Fang! Heel!' he cried. 'Heel, Wolf!' To the relief of Frodo and
840\, Pippin introduced the other two to the farmer. 'Mr. Frodo Baggins,' he
   name Baggins the farmer started, and gave Frodo a sharp glance. For a moment
841
    Frodo thought that the memory of stolen mushrooms had been aroused, and
842
    name. I recollect the time when young Frodo Baggins was one of the worst
843
   Frodo sat for a moment looking at the fire, but his only thought was gone mixing yourself up with Hobbiton folk, Mr. Frodo. Folk are queer up
844
845
846\, Frodo said nothing: the shrewd guesses of the farmer were rather
847
    'Well, Mr. Frodo,' Maggot went on, 'I'm glad that you've had the sense
    'Maybe you're right,' said Frodo, avoiding the farmer's eye and staring
848
    'I was thinking so,' said Frodo. But we have got to try and get there;
849
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 $850\,$ 'And so should we!' said Frodo. 'But we must be going at once, I'm

```
851 Frodo now accepted the invitation gratefully, to the relief of Pippin
852 seemed slower than a snail to Frodo. Beside him Pippin was nodding towards
853 'You'd better be hidden, Mr. Frodo,' said Sam anxiously. 'You get down
854\, Frodo sprang out of the waggon to greet him. 'So there you are at
855 you'll excuse me, Mr. Merry and Mr. Frodo and all, I'd best be turning for
856\, dwindled into the foggy night. Suddenly Frodo laughed: from the covered
857 his head, and for a moment had a passing wish that Mr. Frodo could have gone
858 'Look back, Mr. Frodo! Do you see anything?'
859 'Something that is following us,' said Frodo. 'But don't ask any more
860 'Thank goodness you don't keep any boats on the west -bank!' said Frodo.
861
    'We had our supper early with Farmer Maggot,' said Frodo; 'but we could
862\, It was some distance from the Brandywine to Frodo's new house at
863 hedge. Frodo had chosen it, because it stood in an out-of-the-way corner of
864\, the windows were dark and shuttered. Frodo knocked on the door, and Fatty
    Frodo looked round. It did look like home. Many of his own favourite 'Which order shall we go in?' said Frodo. 'Eldest first, or quickest There was a terrific splash, and a shout of Whoa! from Frodo. It
865
866
867
868
    called. Frodo came out drying his hair.
    'They're mine!' said Frodo. 'Given to me by Mrs. Maggot, a queen among
869
870 likings of Big People. A fact which partly explains young Frodo's long
    'We have all been scared,' said Pippin after a pause, in which Frodo
871
872 'Black figures riding on black horses,' answered Pippin. 'If Frodo
873\, gave various supporting nods and exclamations. Frodo remained silent.
874 Maggot's voice. What do you make of it all, Frodo?'
    'Cousin Frodo has been very close,' said Pippin. 'But the time has come
875
    'That was only a guess,' said Frodo hastily. 'Maggot does not know
877
    many strange things. But you can at least tell us, Frodo, whether you think
    'I think, ' answered Frodo slowly, 'that it was a good guess, as far as
878
879
    'Well!' said Frodo at last, sitting up and straightening his back, as
880
    'What do you mean?' said Frodo, looking at him anxiously. 'Just this,
881\, my dear old Frodo: you are miserable, because you don't know how to say
882\, Frodo opened his mouth and shut it again. His look of surprise was so
883 comical that they laughed. 'Dear old Frodo!' said Pippin. 'Did you really
    'Good heavens!' said Frodo. 'I thought I had been both careful and 'But I must go,' said Frodo. 'It cannot be helped, dear friends. It is
884
885
    'My dear and most beloved hobbits!' said Frodo deeply moved. 'But I
887
    The Ring!' said Frodo, now completely amazed.
888
    'Go on!' said Frodo faintly.
    must be the only one in the Shire, besides you Frodo, that has ever seen the
889
    'You have read his book!' cried Frodo. 'Good heavens above! Is nothing
890
891
    Frodo?'
    'Where is he?' said Frodo, looking round, as if he expected a masked
892
893
    'Sam!' cried Frodo, feeling that amazement could go no further, and
894\, to you, Mr. Frodo, nor to Mr. Gandalf for that matter. He has some sense,
    'But it does not seem that I can trust anyone,' said Frodo. Sam looked
896\, word. We are your friends, Frodo. Anyway: there it is. We know most of what
   'I don't deny it,' said Frodo, looking at Sam, who was now grinning. 'I
898 'Good! That's settled. Three cheers for Captain Frodo and company!'
899 'Very good!' said Frodo. 'But in that case there are a lot of things to
900\, 'I don't know,' answered Frodo. 'I fear those Black Riders, and I am
901 'It seems to have been a very efficient conspiracy,' said Frodo. 'But
902\, Frodo sat for a while in thought. 'I have made up my mind,' he said
903\, 'Not quite,' said Merry. It sounds very desperate, but I believe Frodo
904\, when the fit takes them. We have a private entrance. Frodo went in once,
905\, Fond as he was of Frodo, Fatty Bolger had no desire to leave the Shire,
906\, had even brought along some old clothes of Frodo's to help him in playing
    'Excellent!' said Frodo, when he understood the plan. 'We could not
907
908 When at last he had got to bed, Frodo could not sleep for some time.
909 Frodo woke suddenly. It was still dark in the room. Merry was standing 910 'All right! What is it?' said Frodo, still shaken and bewildered. 911 Here Fatty Bolger halted. 'Good-bye, Frodo!' he said. 'I wish you were
912 lucky,' said Frodo. 'Tell Gandalf to hurry along the East Road: we shall
913 that path,' Frodo said to him. 'Don't let us lose one another, or forget
914 Frodo began to wonder if it were possible to find a way through, and if
915 their ears. Frodo tried to sing a song to encourage them, but his voice sank
916 settling steadily on Frodo's heart, and he regretted now with every step
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917Frodo felt his chin go down and his head nod. Just in front of him 918 Pippin fell forward on to his knees. Frodo halted. 'It's no good,' he heard 919 Frodo did not like the sound of this. 'Come on!' he cried. 'We can't 920 Suddenly Frodo himself felt sleep overwhelming him. His head swam. 921 Frodo lay for a while fighting with the sleep that was overpowering 922 He rushed back to the bank. Frodo was in the water close to the edge, 923 'You were dreaming I expect, Mr. Frodo,' said Sam. 'You shouldn't sit 924 'What about the others?' Frodo asked. 'I wonder what sort of dreams 925 Frodo and Sam beat first upon the tree-trunk where Pippin had lain. 926 'What a foul thing to happen!' cried Frodo wildly. 'Why did we ever 927'I suppose we haven't got an axe among our luggage, Mr. Frodo?' asked 928 'I brought a little hatchet for chopping firewood,' said Frodo. 'That 929 'We might,' said Frodo doubtfully. 'We might succeed in roasting Pippin 930 'Who? What?' shouted Frodo, rushing round to the other side of the 931 little fire and stamped out the sparks. But Frodo, without any clear idea of 932 Half hopeful and half afraid of some new danger, Frodo and Sam now both Frodo and Sam stood as if enchanted. The wind puffed out. The leaves 933 'Help!' cried Frodo and Sam running towards him with their hands 934 'My friends are caught in the willow-tree,' cried Frodo breathlessly. 935'Come dear folk!' she said, taking Frodo by the hand. Faugh and be 936 smiled. 'Fair lady Goldberry!' said Frodo at last, feeling his heart moved 937'Fair lady!' said Frodo again after a while. 'Tell me, if my asking 938 939 Frodo looked at her questioningly. 'He is, as you have seen him,' she 940 supper. Sleep gathered on their eyelids. At last Frodo spoke: He fell silent again; but Frodo could not help asking one more 942 In the dead night, Frodo lay in a dream without light. Then he saw the 943 of rock, pierced by a dark arch like a great gate. It seemed to Frodo that 944'Black Riders!' thought Frodo as he wakened, with the sound of the hoofs 945 They leapt up refreshed. Frodo ran to the eastern window, and found $946\,$ hobbits listened with delight; and Frodo was glad in his heart, and blessed $947\,$ be seen all round the house but falling water. Frodo stood near the open $948\,$ Man Willow, and Frodo learned now enough to content him, indeed more 949 Frodo could not tell. Ele did not feel either hungry or tired, only filled $950\,$ fashion, news had reached him from Gildor concerning the flight of Frodo. $951\,$ Frodo found himself telling him more about Bilbo and his own hopes and fears $952\,$ story: and Frodo, to his own astonishment, drew out the chain from his 953 vanished with a flash. Frodo gave a cry - and Tom leaned forward and handed 954 Frodo looked at it closely, and rather suspiciously (like one who has 955weighed the same: for that Ring had always seemed to Frodo to weigh $956\,$ an exclamation. Frodo was delighted (in a way): it was his own ring all $957\,$ his shining eyes. 'Hey! Come Frodo, there! Where be you a-going? Old Tom $958\,$ Frodo laughed (trying to feel pleased), and taking off the Ring he came 959 them, he could not tell which, Frodo heard a sweet singing running in his 960 slope, when suddenly Frodo stopped. 961 shines!' And to Frodo she said: 'Farewell, Elf-friend, it was a merry 962 But Frodo found no words to answer. He bowed low, and mounted his pony, 963 'Splendid!' said Frodo. 'If we make as good going this afternoon as we 964 wandering in different directions they went in file, with Frodo leading. Sam 965 to stretch on endlessly. Suddenly Frodo saw a hopeful sign. On either side 966 'Hoy! Frodo! Hoy!' It was away eastward, on his left as he stood under the 967 and far ahead and high above him. 'Frodo! Hoy!' came the thin voices out of 968 'No!' said Frodo; but he did not run away. His knees gave, and he fell 969 hobbit, wailing for some final and desperate danger to make it grow. Frodo $970\,$ warmth for which it hungered. Frodo was chilled to the marrow. After a while 971 At first Frodo felt as if he had indeed been turned into stone by the $972\,$ Frodo fell forward over Merry, and Merry's face felt cold. All at once 973There was a sudden deep silence, in which Frodo could hear his heart door -like opening appeared at the end of the chamber beyond Frodo's feet; 974975 faces of the three hobbits lying beside Frodo. They did not stir, but the 'Come, friend Frodo!' said Tom. 'Let us get out on to clean grass! You Together they carried out Merry, Pippin, and Sam. As Frodo left the 976977978 To Frodo's great joy the hobbits stirred, stretched their arms, rubbed 979first at Frodo, and then at Tom standing large as life on the barrow-top 'What am I saying? I have been dreaming. Where did you get to, Frodo?' 980 'I thought that I was lost,' said Frodo; 'but I don't want to speak of 981 982 Frodo saw him running away southwards along the green hollow between

```
983
    asked Frodo.
984 Though Frodo looked about him on every side he saw no sign of the great
985\, be seen. 'Well, here we are again at last!' said Frodo. 'I suppose we
986 'It may be all we could wish,' said Frodo; 'but it is outside the Shire
987 It was dark, and white stars were shining, when Frodo and his
988 'We are making for the inn here,' answered Frodo. 'We are journeying
989 place to discuss them,' said Frodo, not liking the look of the man or the
990\, He wished them good night, and they said no more; but Frodo could see
991
    'What's wrong with the inn?' said Frodo. 'Tom Bombadil recommended it.
992\, yard they climbed up the steps. Frodo went forward and nearly bumped into a
993
    'Can we--' began Frodo.
994 'Mr. Took and Mr. Brandybuck,' said Frodo; 'and this is Sam Gamgee. My
995\, talk) that Frodo, Pippin, and Sam decided to join the company. Merry said it
996 large and mixed, as Frodo discovered, when his eyes got used to the light.
    could not imagine sharing a name without being related, they took Frodo to
997
998
    The Bree-hobbits were, in fact, friendly and inquisitive, and {\sf Frodo}
999 At this a chorus of voices broke out. If Frodo had really wanted to
    go for further information. But after a time, as Frodo did not show any sign
1000
    doings in the Shire. Frodo did not prove very communicative, and he soon
1001
1002 Frodo a little uneasy. One of the Bree-landers, who seemed to have been in
1003 Suddenly Frodo noticed that a strange-looking weather-beaten man,
1004\, 'Who is that?' Frodo asked, when he got a chance to whisper to Mr.
1005\, Frodo found that Strider was now looking at him, as if he had heard or
1006\, nod, he invited Frodo to come over and sit by him. As Frodo drew near be
    'He did,' said Frodo stiffly. He felt far from comfortable under the
1008 smile, seeing Frodo's glance. 'And there have been even stranger travellers
1009 through Bree lately, he went on, watching Frodo's face.
1010 Frodo returned his gaze but said nothing; and Strider made no further
1011 Frodo became aware that the ridiculous young Took, encouraged by his success
1012\, Frodo was annoyed. It was a harmless enough tale for most of the local
1013 Frodo fidgeted, wondering what to do. Pippin was evidently much
1014\, their danger. Frodo had a sudden fear that in his present mood he might even
1015\, Frodo jumped up and stood on a table, and began to talk. The attention
1016\, of Pippin's audience was disturbed. Some of the hobbits looked at Frodo and
1017
    Frodo suddenly felt very foolish, and found himself (as was his habit
1018\, For a moment Frodo stood gaping. Then in desperation he began a
     probably why it came into Frodo's mind just then. Here it is in full. Only a
    There was loud and long applause. Frodo had a good voice, and the song
1020
1021 They made Frodo have another drink, and then begin his song again,
    quick at picking up words. It was now Frodo's turn to feel pleased with
1022
1023 Frodo felt a fool. Not knowing what else to do, he crawled away under
1024\, his thoughts. Frodo leaned back against the wall and took off the Ring. How
    'I don't know what you mean,' said Frodo, annoyed and alarmed.
1025
1026
    'What about?' asked Frodo, ignoring the sudden use of his proper name.
1027 Frodo in the eye. 'You may hear something to your advantage.'
1028 'Very well,' said Frodo, trying to appear unconcerned. 'I'll talk to
1029 'Of course there's a mistake!' said Frodo. 'I haven't vanished. Here I
1030 or two gave Frodo a black look and departed muttering among themselves.
1031\, good night to the landlord, but not to Frodo and his friends. Before long no
1032\, 'I am very sorry to have caused any trouble,' said Frodo. 'It was quite
1033 'Certainly!' said Frodo; but his heart sank. He wondered how many
1034 Frodo, Pippin, and Sam made their way back to the parlour. There was no
1035 Frodo. 'What have you to say?'
1036
    'What do you mean?' asked Frodo sharply.
1037
    'And what will that be, pray?' said Frodo. He suspected now that he had
1038 if he guessed Frodo's thoughts. 'Just this: you must take me along with you,
     'Oh, indeed!' replied Frodo, surprised, but not much relieved. 'Even if
1039
1040
     'Go on then!' said Frodo. 'What do you know?'
     'I don't see what interest my name has for any one in Bree,' said Frodo
1041
     I was looking for a Hobbit called Frodo Baggins. I wanted to find him
1042
    'Now, don't mistake me!' he cried, as Frodo rose from his seat, and Sam
1043
1044\, There was a silence. At last Frodo spoke to Pippin and Sam: 'I ought to
    'Do you think he ' began Frodo.
1045
1046 altogether like mysterious vagabonds of my sort.' Frodo gave him a puzzled
1047
    'It was sheer accident!' interrupted Frodo.
```

1048 'Hardly more than it was already,' said Frodo. 'I knew these horsemen

- 1049 said Frodo, still determined not to understand Strider's hints. 1050 There was a heavy silence. Frodo made no answer, his mind was confused 'With your leave, Mr. Frodo, I'd say no! This Strider here, he warns 1052 but turned his keen eyes on Frodo. Frodo caught his glance and looked away.
- 1053 'And what has that got to do with me?' asked Frodo.
- 'Indeed! Let's have it then!' said Frodo, unwisely interrupting. 1054
- 'He said it? And who was he?' asked Frodo eagerly. 1055
- 1056 'Well, what have you done?' said Frodo, getting impatient with the slow
- 1057 'A letter for me from Gandalf!' cried Frodo.
- $1058\,$ 'It is,' said Frodo, 'and you had better give me that letter at once, $1059\,$ 'What do you mean?' asked Frodo.
- 1060 'He's here with my leave,' said Frodo. 'He came to offer me his help.'
- 'I'm sorry I can't explain it all,' answered Frodo. 'I am tired and 1061
- $1062\,$ is,' said Frodo. 'Are you still willing to help me?' 'I am,' said Mr.
- 1063 'Well, we can only hope the Riders won't come back yet,' said Frodo.
- 'In any case we must be called at dawn,' said Frodo. 'We must get off 1064
- 'I don't know,' said Frodo with sudden anxiety. They had forgotten all 1065
- 'Well?' said Strider. 'When are you going to open that letter?' Frodo 1066
- 1067 Dear Frodo,
- $1068\,$ Frodo read the letter to himself, and then passed it to Pippin and Sam.
- $1069\,$ Frodo turned and looked at him thoughtfully, wondering about Gandalf s
- 1070 There was a long silence. At last Frodo spoke with hesitation. 'I
- 'Did the verses apply to you then?' asked Frodo. 'I could not make out 1071
- 1072 'When did you last see Gandalf?' asked Frodo. 'Do you know where he is,
- 1073 Gandalf's absence, I mean?' asked Frodo.
- 1074 alarm for a moment before he gasped: 'I have seen them, Frodo! I have seen
- 1075 'Black Riders!' cried Frodo. 'Where?'
- 1076 started, noticing the stranger for the first time. 'Go on!' said Frodo.
- 1077 'We seem to have enemies all round,' said Frodo. 'What are we to do?'
- 1078 While Strider was gone, Frodo gave Merry a rapid account of all that
- $1079\,$ chair against the door and shut the window. Peering out, Frodo saw that the
- 1080 blanket. 'Very ridiculous of you, Frodo! But I wish I had been there to see.
- 1081 In the early night Frodo woke from deep sleep, suddenly, as if some
- 1082 Frodo soon went to sleep again; but his dreams were again troubled with
- Frodo was crushed by the news. How could they hope to reach Rivendell thoughtfully, as if he guessed what Frodo had in mind. 'We should not go 1083
- 1084 'Can't anything be done, Mr. Butterbur?' asked Frodo. 'Can't we get a 1085
- 1086 'Bill Ferny?' said Frodo. 'Isn't there some trick? Wouldn't the beast
- 1087 Bree was buzzing with excitement. Frodo's vanishing trick; the appearance of
- 1088 once more,' said Frodo. 'I should like nothing better than to stay in your
- $1089\,$ he stared at shut their mouths and drew away. He walked in front with Frodo;
- $1090\,$ near to the further gate, Frodo saw a dark ill-kept house behind a thick
- 1091 As Frodo lay, tired but unable to close his eyes, it seemed to him that
- 1092 Frodo lay down again, but for a long while he could still see the white
- 1093 'What do you mean?' asked Frodo.
- 1094 'What do you advise us to do?' asked Frodo.
- 1095 Pippin declared that Frodo was looking twice the hobbit that he had been.
- 1096 'Very odd,' said Frodo, tightening his belt, 'considering that there is
- 1097 crown of the hill; Frodo and Merry followed, tired and breathless. The last
- 1098 On the flat under-side Frodo saw some scratches: 'There seems to he a
- $1099\,$ mean,' said Frodo 'It would be a great comfort to know that he was on the
- 1100 'A fortnight!' said Frodo. 'A lot may happen in that time.'
- 1101 In that lonely place Frodo for the first time fully realized his
- 1102 pulling Frodo down beside him. Merry threw himself alongside.
- 1103 specks, but neither Frodo nor Merry could make out their shapes for certain;
- 1104 --More--
- 1105 Files Proccessed: 1
- 1106 Bytes Processed: 1020227

Program: catgrepmore.c

```
1 /*
2 Nikola Janjusevic
3 Operating Systems Assignment 4
4 catgrepmore pattern infile
5 cat infile | grep pattern | more
6 */
7 // argument parsing adapted from gnu.org example of getopt
8 # include <ctype.h>
9 # include <stdio.h>
10 # include <stdlib.h>
11 # include <unistd.h>
12 # include <fcntl.h>
13 # include <string.h>
14 # include <errno.h>
15 # include <sys/wait.h>
16 # include <setjmp.h>
17
18 # define DEBUG 0
19 # define BUFFSIZE 4069
20
21 int byte_count=0;
22 int file_count=0;
24 void int_handler(int sn)
25 {
26
        fprintf(stderr,"\nFiles Proccessed: %d\nBytes Processed: %d\n", \
27
           file_count, byte_count);
28
        exit(0);
29 }
30
   pid_t execPipeIO(const char *cmd, const char *arg, int ifd, int ofd, \
31
32
       const int *close_fds, const int n);
33
   int cat(int fdi, int fdo, char *buf, int buff_size);
34
35
   int main(int argc, char **argv)
36
   {
37
       pid_t pid1, pid2;
38
       int i, fd_in;
39
       int pipes [4];
40
       int bs = BUFFSIZE;
41
       char *buf;
42
       int wstatus;
43
44
       // SIGINT HANDLE
45
       struct sigaction sa;
46
       sa.sa_handler=int_handler;
47
       sa.sa_flags=0;
48
       sigemptyset(&sa.sa_mask);
49
       if (sigaction (SIGINT, &sa, 0) == -1)
50
           perror("sigaction");
51
52
            exit(-1);
53
       }
54
       if( signal(SIGPIPE, SIG_IGN) == SIG_ERR )
55
56
            perror("sigpipe set error");
57
            exit(-1);
58
       }
59
60
       // valid arguments check
61
       if( argc<3)
62
       {
63
            fprintf(stderr, "%s: must specify grep pattern and infile\n", argv[0]);
```

```
64
             exit(-1);
65
         }
66
67
         // buffer allocation
68
         if( (buf=malloc(bs)) < 0 )</pre>
69
70
             perror("malloc error");
71
             exit(-1);
         }
72
73
74
         // loop over infiles
75
         for(i=2; i<argc; i++)</pre>
76
77
             // open infile
78
             if( (fd_in=open(argv[i], O_RDONLY)) < 0)</pre>
79
80
                 fprintf(stderr,"infile %s open error: %s\n", \
81
                      argv[i], strerror(errno));
82
                 exit(-1);
             }
83
84
85
             // pipe creation
86
             if(pipe(pipes)<0 || pipe(pipes+2)<0)</pre>
87
             {
88
                 perror("error creating pipes");
                 exit(-1);
89
90
91
             // pipe[0] grep read
92
             // pipe[1] cat write
93
             // pipe[2] more read
94
             // pipe[3] grep write
             if(DEBUG)
95
96
             {
97
                 fprintf(stderr,"+ pipes[]={%d,%d,%d,%d}\n", \
98
                      pipes[0],pipes[1],pipes[2],pipes[3]);
99
             }
100
101
             // FORK -> EXEC GREP
102
             // array of file descriptors for child process to close
103
             const int close_fds1[3] = {pipes[1],pipes[2],fd_in};
             pid1 = execPipeIO("grep",argv[1],pipes[0],pipes[3],close_fds1,3);
104
105
             if (DEBUG)
106
                 fprintf(stderr,"+ grep pid: %d\n",pid1);
107
108
             // FORK -> EXEC MORE
             const int close_fds2[4] = {pipes[0],pipes[1],pipes[3],fd_in};
109
             pid2 = execPipeIO("more",NULL,pipes[2],STDOUT_FILENO,close_fds2,4);
110
111
             if (DEBUG)
112
                 fprintf(stderr,"+ more pid: %d\n",pid2);
113
114
             // close pipe references
115
             if( close(pipes[0]) == -1 || close(pipes[2]) == -1 || close(pipes[3]) == -1 )
116
                 perror("error, parent couldn't close pipe references");
117
             if (DEBUG)
118
                 fprintf(stderr,"+ catting infile %s\n",argv[i]);
119
120
             // CAT
121
             cat(fd_in, pipes[1], buf, bs);
122
             file_count++;
123
124
             // close the infile
             if(fd_in != STDIN_FILENO && close(fd_in) < 0)</pre>
125
126
             {
127
                 fprintf(stderr, "infile %s close error: %s\n", \
128
                      argv[i], strerror(errno));
129
                 exit(-1);
```

```
}
130
131
132
             if( close(pipes[1])<0 )</pre>
133
134
                 fprintf(stderr, "cat write pipe close error: %s\n", strerror(errno));
135
                 exit(-1);
             }
136
137
138
             // wait for ALL child processes to terminate
139
140
             while( (p=wait(&wstatus))>0 || errno==EINTR )
141
             {
142
                 if (DEBUG)
143
                      fprintf(stderr,"+\ terminated\ pid:\ \%d\n\t+\ if\ exited:\ \%d\n"
                               "\t+ exit status: d\n",p,\IFEXITED(wstatus), \
144
145
                              WEXITSTATUS(wstatus));
146
             }
         }
147
148
         fprintf(stderr,"\nFiles Proccessed: %d\nBytes Processed: %d\n", \
149
             file_count, byte_count);
150
151
152
         free(buf);
153
         return 0;
154
    }
155
    // pipeIO redirection and execution of cmd
156
157
   // uses execlp with only one argument, arg
158 pid_t execPipeIO(const char *cmd, const char *arg, int ifd, int ofd, \
159
         const int *close_fds, const int n)
160
   {
161
         pid_t pid;
162
         int i;
163
         switch( pid=fork() )
164
165
         case -1:
166
             fprintf(stderr, "%s fork error: %s\n", cmd, strerror(errno));
167
             return -1;
168
         case 0:
169
             // redirect IO to pipes
170
171
             if( dup2(ifd,STDIN_FILENO)==-1 )
172
                 fprintf(stderr, "\%s in-pipe failure: \%s\n", cmd, strerror(errno));\\
173
                 exit(-1);
174
175
             }
             if( dup2(ofd,STDOUT_FILENO) == -1 )
176
177
             {
178
                 fprintf(stderr, "%s out-pipe failure: %s\n", cmd, strerror(errno));
179
                 exit(-1);
180
             }
181
182
             // close dangling files
183
             for(i=0; i<n; i++)
184
             {
185
                 if( close(close_fds[i]) == -1 )
186
187
                      perror("error closing dangling fds in child");
                      exit(-1);
188
189
                 }
             }
190
191
             if( signal(SIGPIPE, SIG_DFL) == SIG_ERR )
192
193
194
                 perror("sigpipe set error in child");
195
                 exit(-1);
```

```
}
196
197
198
            // execute
199
             execlp(cmd,cmd,arg,NULL);
200
             fprintf(stderr, "%s cmd exec failed: %s\n", cmd, strerror(errno));
201
             exit(-1);
202
203
        default:
204
            return pid;
205
206 }
207
208
209 // performs concatenation of infile to outfile
210 int cat(int fdi, int fdo, char *buf, int buff_size)
211
   {
212
        int n,m;
213
        char *temp;
        while( (n=read(fdi, buf, buff_size)) > 0 )
214
215
216
             temp = buf;
217
             while ( (m = write(fdo, temp, n)) !=n )
218
219
                 if(errno==EPIPE)
220
                     return -1;
221
                 fprintf(stderr,"outfile with fd=%d write error: %s\n", \
222
                     fdo, strerror(errno));
223
                 temp+=m;
             }
224
225
             // updating byte count global
226
             byte_count+=n;
227
        }
228
        if(n<0)
229
        {
230
             fprintf(stderr,"infile with fd=%d read error: s\n, \
                fdi, strerror(errno));
231
232
             exit(-1);
233
234
        return 0;
235 }
```