Goal-Plan hierarchy for test *testfr02*

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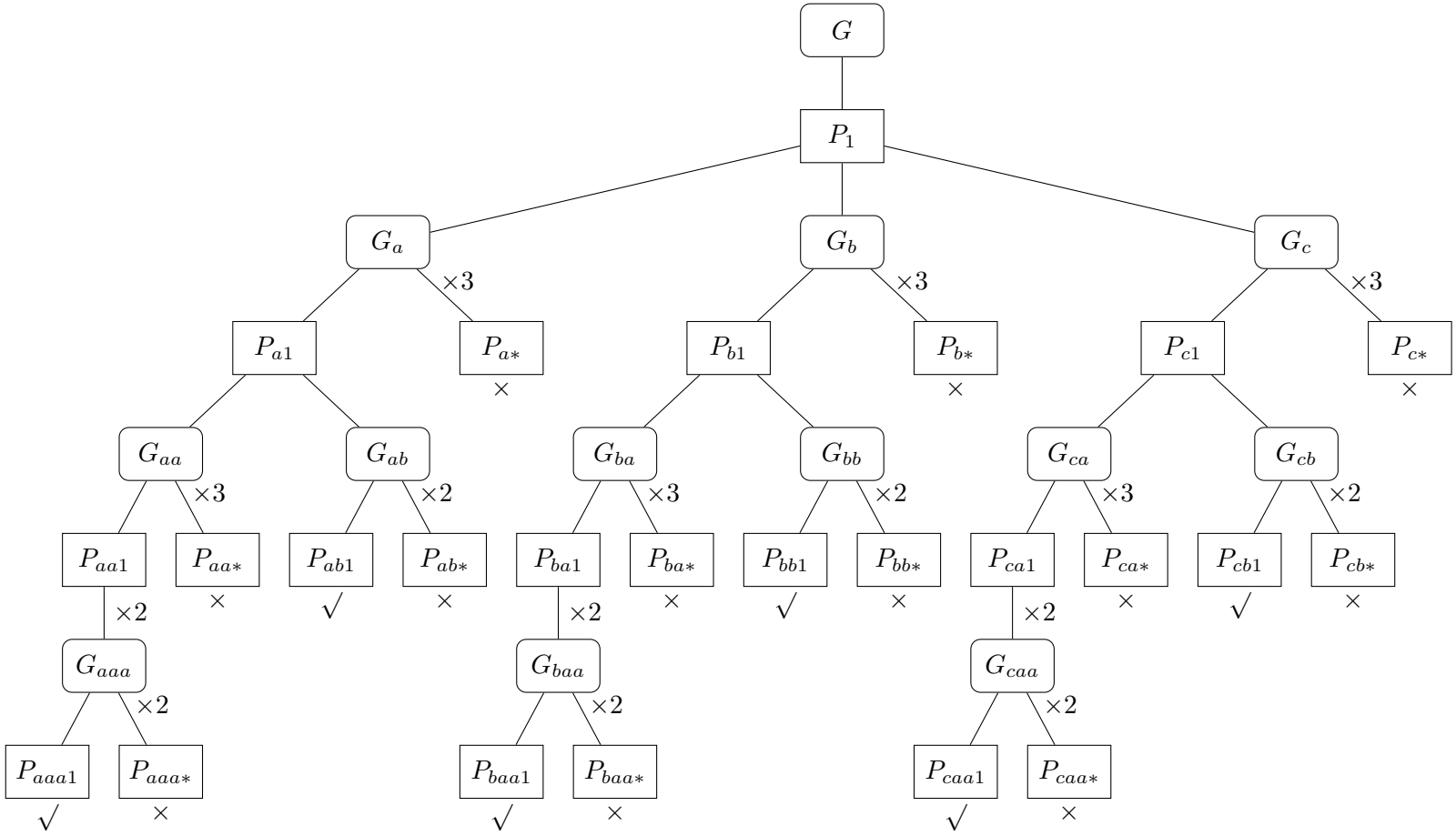

Figure 1: The hierarchy has 4 top level plans $P_1 \ldots P_4$ and the total number of worlds is 2^5. Only P_1 has the solutions, $P_2 \ldots P_4$ are all single action plans that always fail. Successful execution trace is of length 9 distributed between goals $G_a \ldots G_c$. The aim is to compare how many actions it takes on average for the top level goal G to succeed — with and without failure recovery. The intuition is that failure recovery should help learn G faster. For instance, say we have learnt to achieve G_a and G_b. Then to learn G_c we must first perform G_a, then G_b and then try different options as we acquire experience in G_c. If we were to re-post G after each failure then for each unsuccessful choice in G_c we have to do a lot of re-work (i.e. achieve G_a and G_b again) before we can try something else. With failure recovery enabled however, when learning G_c we only perform G_a and G_b once and then exhaust all options for G_c in a single try. However, this assumes that failures do not (generally) change the world in such a way that alternatives tried with failure recovery will never succeed. If that were the case then failure recovery would perform worse than reposting.